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THE BRICKBUILDER.

AN ILLUSTRATED MONTHLY DEVOTED TO THE ADVANCEMENT OF ARCHITECTURE IN MATERIALS OF CLAY.

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TIME IN BUILDING.

THE saying that time is money is an adage which is so thoroughly recognized in our modern business undertakings, that anything looking towards a reduction of time required is considered a regardable factor in every undertaking. This is particularly true in building. When we read accounts in the past of how a building of no more magnitude than the Farnese Palace consumed year after year, and, in fact, almost generations of continued effort, and compare the results with what is often accomplished nowadays in a few months, we have an uneasy feeling that either our ancestors took too much time, or that we do not give the work the attention which it requires. As a matter of fact, however, speed in building operations is by no means inconsistent with the best of workmanship. That is to say, that through the proper organization on the part of the builder with the facilities which are within reach of every one who has the money to buy them, it is possible to erect a building of almost any size in the course of a very few months. There have been phenomenal stories from time to time of the rapid rate at which some of our Western structures have sprung up, almost like mushrooms. We recall one case particularly of a building covering 8,000 ft. which was practically completed, as far as related to all the structural work, inside of ninety days. The function of the burnt clay industries in reducing the necessary time for building is unquestionable. We hear complaints of delays due to terra-cotta, and how hard it is to get orders filled promptly and on time, and yet any one who has had practical experience with stone knows that while the crude material, if it can be obtained, can be set quickly and effectively, only half the battle is then won, as it has to be cut in place and by hand, which would not be the case with the more readily obtained, more elastic, and more readily duplicated terra-cotta. Of course, given ample time in advance to get out every stone and to have everything numbered and ready to put right in place, one material can serve as well as another; but such conditions rarely obtain in a modern commercial building. Seldom are the plans definitely decided upon until after the contract is signed, and it has been our experience that under such conditions, if there is a great deal of repetition in a building, terra-cotta is the only material which lends itself to rapidity of execution.

As regards the main bearing walls in an ordinary building, brick is the only material which can be depended upon in a rush job. We have to wait for cast iron, we always wait for structural steel, and usually have to wait for cut stone, but brick can be had by the million on short notice in all our large cities, and it is the use of brick and terra-cotta, and the fact that it can be put in so readily, set in place without delay, and handled without special machinery that enables our modern commercial buildings to so outdistance the records of the past.

One of our largest builders some time since amused himself by making calculations as to how much time he would require with modern machinery and appliances to construct the great Pyramid. Our recollection is that the time was something like sixteen months. This is on the assumption that it was to be constructed of block granite, but if it were to be constructed of brick throughout, he estimated that he could contract to complete the whole inside of nine months. This would be at the rate of something less than one hundred million brick a month. These are mere speculations, to be sure, but the fact is almost beyond question, that to secure the economy of time which is so necessary to modern investment, the burnt clay products of necessity are called upon to furnish the bulk of material.

MONTEVENTOSO.

IF an essential element in the temperament of an architect is a liberal endowment of vivid imagination, we are quite sure that no one will question Mr. Goodhue's ability. "Monteventoso" is an artist's dream which must appeal to every one who loves pure imaginative design, and if discoveries of the sort which Mr. Goodhue has made at the base of the Apennines could be extended so as to reflect a little of the same spirit in more of our modern structures, and cast a measure of romance over the humdrum steel beams and brick arches of our daily bread and butter, our metaphors might become decidedly mixed, but our art would be far happier. It is a curious phase of the present state of architecture in this country that we see the extremes of the most matter-of-fact, dry-as-dust, uninteresting, constructive work right alongside of the most poetic, imaginative work which in some respects the world has ever seen. And in our streets, though commerce reigns supreme and questions of return on the investment are assumed to be more important than matters of pure art, we yet see every day a constantly increasing proportion of the

purely picturesque and an ever growing tendency on the part of our architects to look at their art through the rose-colored glasses which make life so enjoyable. We have now the opportunities in the way of materials, our clients have the money, and if we do not succeed in producing within the next generation works of a high esthetic character it will not be because they are unexpected or unwelcome. We need the imaginative treatment which Mr. Goodhue has manifested so happily. We need more of it in our brick and terra-cotta, in our decorations, and in our point of view as well, and perhaps "Monteventoso" may be an incentive to some of the younger men, who seem to be in the rut of mere routine, to lift their eyes beyond the everyday, uninteresting work which forms the bulk of the grind in every large office, and see the delights and the esthetic possibilities of architecture, the most fascinating of the arts.

WE were witness to a rather interesting test of the strength of a brick arch a few days since. A building was in process of demolition which had stood in place ever since 1858. The floors were constructed of brick arches turned between cast-iron beams; steel was not known in those days. The arches were 4 ins. thick at the crown, spanning about 4 ft. 6 ins., and the haunches were filled up level with concrete. The mortar in which the bricks were set appeared to have very little cement in it. In taking down the upper portion of the building a heavy stone weighing in the vicinity of a ton dropped from a height of about 30 ft. It struck fairly in the center of one of the arches and broke a hole clean through the brickwork slightly larger than the stone, without, however, dislodging any of the remainder of the brickwork. The masonry about the gap was perfectly secure, and did not seem to be damaged at all by the shock. This is the result which it is usually claimed will follow an accident, though we have no doubt considerable of the strength of this particular arch was due to the mortar, which had been slowly hardening during the last forty years.

A. I. A. CONVENTION.

PREPARATIONS are being made for the annual convention of the American Institute of Architects, which is to be held in Pittsburgh the 13th, 14th, and 15th of November next, and with the prosperity which seems to be dawning upon architects it ought to be possible for many of the profession to attend this convention and derive great mutual benefit therefrom. The value of conventions of this sort does not lie in the mere addresses or exhibitions which are offered in connection therewith, though these are often of very decided merit, but it is rather in the comparing of notes, the readjustment of mutual standards, the bringing together of different minds from different parts of the country, and the awakening process which usually results therefrom that the benefit to the profession is most surely to accrue. It is not good for man to be alone in this world, and the best of architects would do but poor work if they had no one but themselves to depend upon. We are fortunately obliged to help each other. And while past conventions of the American Institute have left much to be desired, and have not always attained the high standard of possibilities which their being might imply, we cannot afford to forego what they have offered, and each year it seems as if there was more reason for their existence, and more positive measurable good resulting to those who attend them in the spirit of mutual help and study.

MISCELLANEOUS.

A CHALDEAN BRICK. — What is asserted to be the oldest brick in existence was recently exhibited at a meeting of the Académie des Inscriptions et Belles-Lettres, of Paris, by M. Henzey, the keeper of the Louvre. It is supposed to date from the fortieth century before Christ, and was discovered at Tello, the ancient Sirpulo, in Chaldea, by the French archæologist, De Sarzee. The brick in question was curved in shape, and, while it had been baked, it did not show any signs of having been pressed or molded. The mark of the maker was merely the impress of his thumb, and the specimen is, without doubt, one of the earliest marks of civilization ever discovered. As brickmaking is the earliest of the known arts, this particular piece must mark very nearly the dawn of civilization. — *New York Evening Post.*

ARCHITECTS FOR PAN-AMERICAN EXPOSITION, BUFFALO. — The allotment of the architects for the various buildings of the Pan-American Exposition to be held at Buffalo in 1901 is as follows: Liberal Arts and Agriculture, Shepley, Rutan & Coolidge, of Boston; Machinery and Transportation and Electricity, Green & Wicks, of Buffalo; Electric Tower, Howard, Cauldwell & Morgan, of New York; Stadium and Administration, Restaurant, Station, and Cloister, Babb, Cook & Willard, of New York; Horticulture, Forestry, and Graphic Arts, Peabody & Stearns, of Boston; Temple of Music, Esenwein & Johnson, of Buffalo; Mines, Ethnology, and three entrances, George Cary, of Buffalo; landscape plan, bridge, south approach, and all formal landscape work, except the entrance court, Carrere & Hastings, of New York. The block plan has been adopted for the general arrangement of the buildings, the site of which will comprise a tract of about 212 acres adjoining Delaware Park.

HIGHER COST OF BUILDING. — The *Record and Guide*, of New York, in discussing the higher cost of building as applied to that city, presents some interesting figures as follows: —

One of our busy architects has given us a case that is typical of general conditions. About three months ago he drew plans for an eight-story mercantile building, the cost of which, estimated upon then current prices, was to be $45,000. His client proceeded to finance the operation upon that basis, and three months later, that is, the other day, concluded to begin work. Actual estimates were then received, and it was found, to the confusion of every one, that prices had advanced about one third. We are speaking now of the lowest estimate obtainable. Instead of costing $45,000, nearly $60,000 were needed to complete the building. As illuminating the subject, we append a few of the actual estimates received, comparing them with those of three months ago: —

	Prices Three Months Ago.	Lowest Present Prices.
Ironwork	$14,500	$23,895
Plumbing	1,280	1,975
Steam heat	2,400	3,600
Roofing, etc.	1,800	2,800

Mason work, labor 10 per cent. advance.
Hardware, 100 per cent. advance.

Exactly in what way the matter will work itself out, it is not easy to see. Some people are inclined to think that a great many of these "suspended" operations will only be temporarily delayed. Investors and operators will wait for a time, but when they find that the advance in prices is not a merely temporary circumstance they will adjust themselves to the situation and get to business. Work must go on. Prices may even go higher, and each advance will frighten a certain number of people into doing something from fear of finding themselves in a worse position by and by. We are inclined to think that the builder will be wisest who accepts the present market as being as favorable as anything he will get for at least a year or two to come. Prices that have ruled, of recent years, have been ruinously low, and the man who did not take advantage of them has missed his chance for the present. The prosperity of the country must have its due effect on the building material market and on real estate, and the facts which we have just been discussing indicate that the "marking-up" process has commenced in earnest. Real-estate investors and owners should note these facts.

MONTEVENTOSO.

by BERTRAM·G·GOODHUE

(Concluded)

IN every Italian town, even the humblest, there are many things of interest, perhaps grandeur, and in and about the narrow streets of Monteventoso one can scarcely stroll more than a few moments without coming across something, a window or balcony, a fountain or loggia, which is bound to arrest the attention of the passenger.

In the Borgo della Montagna,—a strange, dirty quarter on the western slope of the hill which is surmounted by the church of Saint Catherine, and almost as steep and unexpectedly laid out as the *Contrada degli Avvellenatori*,—is the most architectural, if one may use the word, portion of the town, the haunt of the most delightfully unexpected glories. At one time apparently the Borgo della Montagna was the aristocratic ward — the Faubourg Saint Germain, so to speak. Starting at the corner of the *piazza* it stretches down the hill to the Arch of Gian Galeazzo Visconti and southward to the old monastery garden, now used by the peasants as a sort of Pingreeized space set apart for their special delectation in the way of raising vegetables, and by the goats as a public training ground.

Just before you reach the top of the hill — that is, about three hundred steps from it — is an old stone palace of Ghibelline tendencies, outwardly as stern and uncompromising as the vengeance its owners were wont to wreak. But despite its severity it is now the home of the most genial of men, for at one corner of the *pian' terreno*, if you can call that a ground floor which has two stories below it on one side, is the curiosity shop of Signor Simone Truffaro. Old Simone is a rogue, of course; with a very few things worth buying — I am poor, and they are, I dare say, still there — bristle a whole cartload of falsities of various kinds, false old masters, false diptychs and triptychs, false furniture, and I fear false smiles on the part of old Truffaro and his pretty but equally false daughter Lizetta. There is one thing in the house that is indubitably real, and wonderfully preserved, only you must needs show yourself very much of a connoisseur indeed, and be a very great friend of the proprietor, before he will show it to you — you can't buy it and honestly I don't believe he would sell it if he could. It is the courtyard.

As I have said, the exterior of the building is of stony severity, but one of its former proprietors, during the gracious days of the early Renaissance, being weary of wars, saw fit to recase, if indeed he did not entirely reconstruct, the courtyard with pale gray terra-cotta and colored and glazed reliefs of the same material. Being very circumscribed in extent, these ornaments have the advantage of meeting the eye at so little distance that every refinement of modeling, every subtlety of surface is manifested at once. It is strange how — when first the world of Italian art had turned its thoughts to "the Glory that was Greece and the Grandeur that was Rome" — how completely and absolutely it seemed to give up everything else. One would think there was enough in the history of more recent times, cruel and shameful as it was, to inspire them in their work, but no: everything must needs be classic, and author, artist, and architect harked back to Myth for subjects, from the greatest of masters, such as Alberti, in the church of San Francisco at Rimini, down to the poorest pedant of them all, whose vain and forgotten verses are one masquerade of gods and muses, nymphs and shepherds.

The "high" Renaissance is unforgivable to the romanticist, and the cathedral of Chartres remains a book written in the most undecipherable of dead languages to the academy graduate, but in the early Renaissance for a trifle of time there seems to exist a common meeting ground about whose sun-flecked and shadow-dappled paths the modern and architectural Guelf and Ghibelline can wander at will, conversing amicably enough and without need of recourse to blows. And this little nameless courtyard is one of the most satisfactory of examples. It is true that it is the work of none of the great masters of the period, but more probably of some local modeler in clay, who, chancing to visit Florence, laid to heart the new spirit at work there. Poring perhaps over the manuscripts sent by the Eastern emperor to Cosmo de Medici, and stored in the new library, on his return by some fortunate chance he was commissioned to execute this courtyard, while his heart still throbbed and mind still tingled with what he had heard, read, and seen. Here are the nymphs and muses (with a singular reticence or forgetfulness the designer seems to have omitted all the high gods), the shepherds, the eggs-and-darts, the dentils, and beads of classicism, but somehow — perhaps because of the strangeness of the material to the subject — everything seems invested with an unworn and unwonted charm, quite as

different from real, classic works like the Elgin marbles as the Mars and Venus of Botticelli in the National Gallery at London must needs be different from the ocher-colored pictures by Apelles of which we are now unhappily bereft. The main body of the work, caps, bases, architraves, etc., is of pale gray terra-cotta, but such a gray and such a surface! The color is, first of all, gray to the sight, but as you look there begin to be visible hints and ghosts of other tones, strange pinks and blues, yellows and greens, softly veiled by the glaze; and the term "glaze" is hardly correct, since there is no vulgar shine like that we all know and abhor in the catafalque called a piano, and even sometimes found in materials more nearly resembling those of which I am speaking now. No, this glaze is deep and semi-transparent, filling the interstices and hollows of the modeling with soft liquid spaces, its surface not shiny but dulled, whether by age or handcraft I do not know, into something that shimmers and casts back lights when desired, or by its smooth and reflectionless surface serves to bring out without change of word or thought the meaning of the modeler. In the spandrels of the arches are medallions of various classic characters, all scarcely sculpture, but rather what an architect would substitute for sculpture if it lay within his wishes, and — a harder task — power to do so. Not coarse, muscular, masculine figures or rotund and rather shameless dames, such as one sees in modern French and German works — alas! even in American, too — things for which the greatest architect in the world could but provide a more or less unsuitable *encadrement*, if that is the word. All the figures here are so gracefully and tenderly molded as to completely escape the strutting appearance that sculpture usually wears, but, not satisfied with the miracle of modeling he had performed, the artist cast about his creations the added glamourie of color, now faint and delicate as the gray by which they are surrounded, and then in some shadowy spot gleaming with splendid smalt and tawny cadmium. In the center stands a small fountain with its figure, and here, if anywhere, a fault makes itself felt. The pedestal and basin are gray-green, but the figure, a youth without distinguishing attributes, which cannot be later in date since it is evidently by the same hand, is absolutely colorless though glazed to the last point. Whether the artist felt as does the organist, who, having climbed through chords and melodic mazes to the grandest summit of sublimity, and fearing a Phaeton-fall into the sea of banality and the commonplace, ends abruptly on some unfinished phrase, or whether he had worked out a fantastic theory that the focus of so much magnificence could be naught else than white, dazzling and pure, one may not tell; in certain lights with the sun at the meridian there creep in certain justifications for such a theory, but for the greater portion of the time you can but wonder that after so much the master should have so stayed his hand just short of perfection. It is needless to apologize for the lack of any sketch of this place; if a thing is good enough to be worth sketching it is too good for me to sketch, and the little photograph I shamefacedly snapped of it turned out worthless with the verticals all distorted and the exposure hopelessly undertimed. If by any chance you should find yourself in Monteventoso and find the shop (I don't think you will, but it is just possible), mention my name to Signor Truffaro and perhaps he'll show you this courtyard, but when you come out through the shop be particularly careful about your purchases, for, if he notices that you are *distrait* you are lost. Above all, don't let him sell you anything of any value: it's sure to be quite worthless.

THE CABINET OF COUNT TEBALDO.

There is one grave objection to northern eyes in almost all southern countries: anything which we can dignify by the name of greensward is practically unknown. In the Jardin Borda, at Cueruavaca, in Mexico, that realized and lovely dream of a fabulously wealthy mining king and poetical adventurer, one may wander for hours without feeling the lack of grass, so bright is the scene, so soothing the mossy cisterns and fountains of cement, so all-abounding the tropical fruits and flowers; but when you come to recall the place you remember, with a slight shock, that grass — genuine green grass, such as the meanest dooryard at home possesses — was nowhere in evidence. To be sure, at certain seasons, I am given to understand, grass does grow in Mexico, but at such times I have not been there, and so remain skeptical.

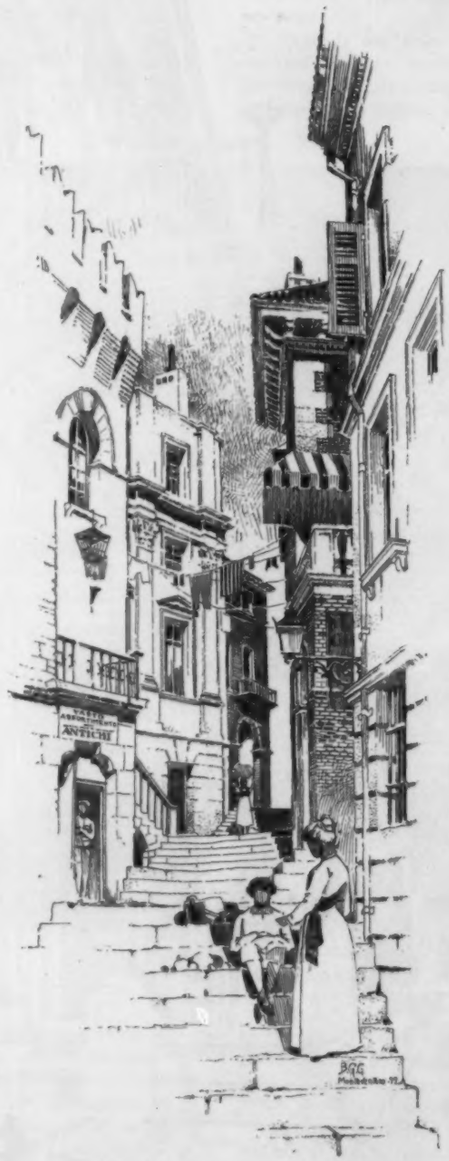
In Italy, where everything you see seems merely an efflorescence on the mold of vanished, even prehistoric civilizations, they have had more time in which to remedy the shortcomings of nature; so in the more favored localities the "personally conducted" are enabled to gaze — not tread — on sward as green and as perfect as at home. But always the peevish one complains, especially if he or she be of the variety that is constantly comparing things abroad with things at home to the utter discomfiture of the first named: "So that is Monte Rosa. Ah, yes — fine — but you should see Mount Wachusett, when the sun is just setting." Or in Chamounix: "Pretty? yes, indeed, but I bet you was never in the grand cañon of the Dead Goat River, in Kootchie-Kootchie County, Colorado — it's strange how so many Americans come over here before seeing the wonders of their own heaven-blessed free country — unpatriotic I call 'em," etc., etc. Probably you are as impatient of this sort of talk as I, but let us confess that on the subject of grass such travelers are more than usually well entrenched, while remembering with shame and sorrow that the Briton visiting our hospitable shores can scoff at our grassy pretensions quite as lustily as we — some of us — do at Mexico's or Italy's.

Throughout Emilia, the moment one leaves the carefully cultivated gardens of the wealthy city or citizen, as the case may be, and steps outside the walls or enclosure gates, he soon finds himself walking on barren rock or sun-browned and hardened *tufa*.

Everywhere, that is, but at Monteventoso, and even there in but

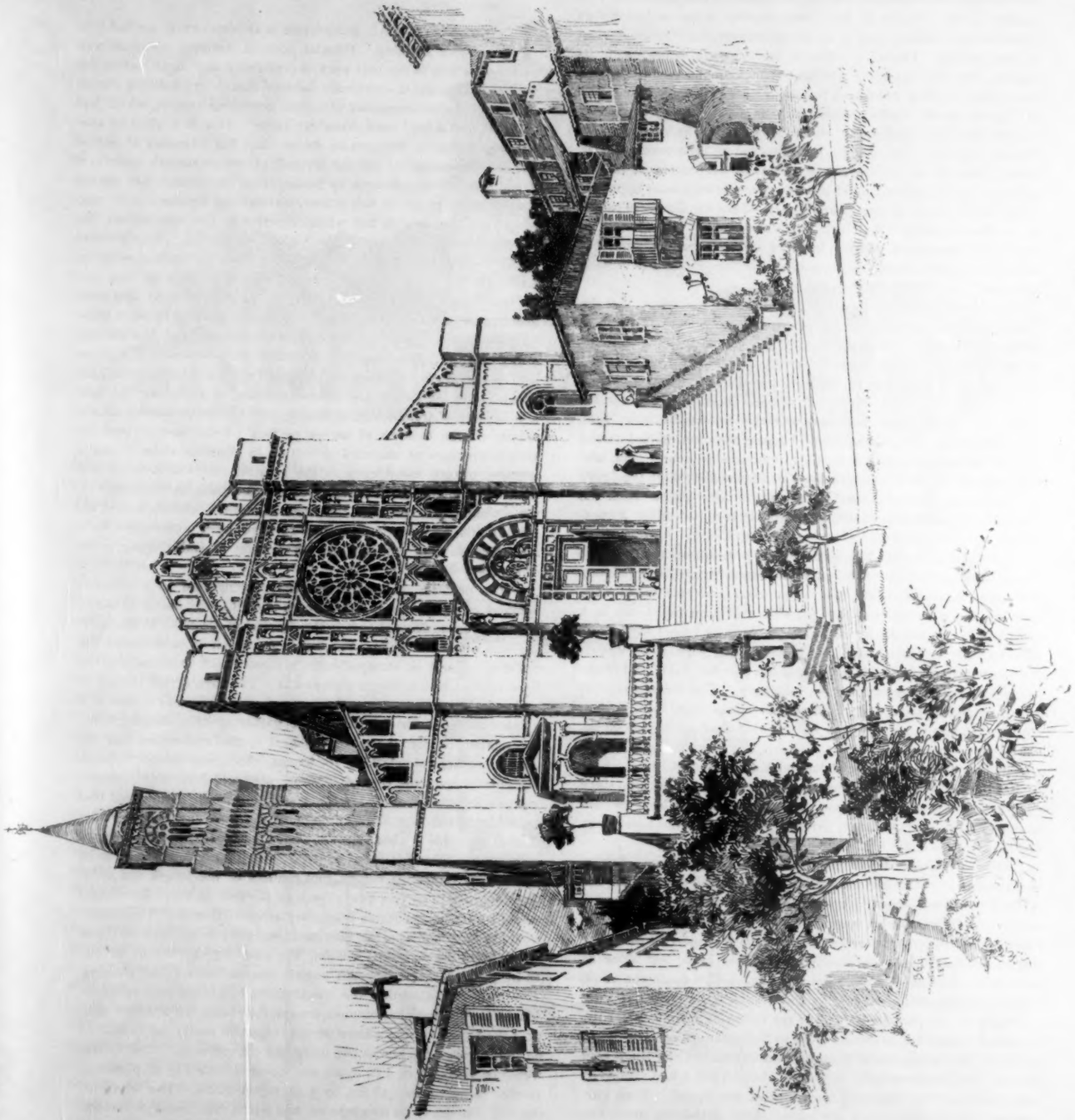
THE ENTRANCE TO THE VISCONTI LIBRARY.

one circumscribed way, for down the mountain side to join the little river at the foot comes, I can't say roars or tumbles or even falls — indeed, trickles is almost too grand a word — a small thread of water through a rod-wide meadow of the greenest green grass. When I first found it I supposed it had its source in some wild glade among the oaks and chestnuts high above and, with a faint sensation of home-sickness for my native forests, I set out to climb up to this supposititious point for a view of the town spread bird's-eye fashion below. As I walked, first past low, straggling *campanni* half hidden in veritable bowers of ilex and olive, and before which old hags and cow-eyed girls were washing clothes in the pools, then past rather more pretentious dwellings varied by occasional spaces of pasture, I grew conscious that my barbarian longings for savage fastnesses were little likely of realization, since things seemed to be growing more and more well-cared-for at every step. At last, following a sudden turn made by the brook, I was brought to a standstill by a steep and flowered incline down which the water dribbled silently; looking up for some way to follow the brook, I noticed the tiled roofs and stained white walls of a tiny villa, set deep among the trees above, and languidly curious, I made my way by a rather circuitous flight of stone steps to the summit of the cliff. Here were the two things for which I had come in search; for, before me, among the flowers and statues of a bewilderingly lovely garden close was a small, rectangular pool in the midst of which rose a fountain — now silent — and figure of some nymph — the Arethusa of the stream, perhaps; while, turning, I looked out over the tree-tops, among which glistened the thin thread of water winding its way downward past the little cottages with their washer-women, through the rocks and sand, past the foul and grimy walls of the town, to the river and plain. Below me in the now windless and shimmering atmosphere huddled the purple and red roofs of the town, the tortuous streets marked by narrow courses of liquid purple through the gold and salmon roofs and walls, from whose midst rose the campanile, clear cut against the hazy distance, the detonation of its bells on the instant breaking the air into an invisible tempest, while its forked battlements seemed less to bring to mind "old, unhappy, far-off things, and battles long ago" than to accent the peace and stillness of to-day, the time and the place. Architect and American as I was, and in Italy for the stern practical purpose of study among the monuments of the past, with little enough leisure even for that laudable purpose, I felt a bit softened (the walk had been hard and I was, perhaps, tired), so seeing no one of whom to ask permission, and a marble bench standing cool and inviting on the terrace beside me, I made bold to sit down to waste some of my precious time: I say precious, since I had agreed for a consideration to supply a certain periodical with an alarmingly large quantity of pictures and text before a date at that time altogether too near, — a clear, logical, and argumentative article on the influence of a certain newly invented portable centering for the construction of vaults, with isometric drawings to point a moral rather than adorn a tale.



IN THE BORGO DELLA MONTAGNA.

And instead of being at work in my stuffy little cubicle of a bed room in the Albergo della Ruota below, here I was, high on the mountain side, sitting in somebody's private garden close on somebody's private marble bench, gazing out across the plain toward distant Modena (which I fancied I could even see), dreaming a world of things none of which had any possible relation to architecture. In the boskage behind me the birds were singing about the same things that filled my mind; small beasts moved cautiously; little green lizards sat on the parapet and looked softly at me; a nightingale, feeling the approach of dusk, tried over a few notes by way of practise for the coming serenade to the rose; the breeze, the eternal wind of Monteventoso, also began to stir in his sleep and to stretch himself among the leaves, and — the present came back with a shock as I heard a gentle voice murmur something which, strangely enough, I could not seem to hear, and I sat up stiffly — feeling most guilty — the trespasser before the owner, the peccant before his judge. A second look convinced me that the judge was likely to be merciful, for I was gazing into the face of no bag-wigged official, or even absurdly pompous *gendarme*, but that of a lady, — not a beautiful Satanita or Biancabella of old time, but the intensely modern sorrow-scarred visage of a mondaine, who knew her Rome and Paris, even London and New York — yes, even Boston. She was speaking French, but at my first sally of stammering apology changed to English as grammatical as my own, yes, more so, but with a charming quaintness of diction and precision of pronunciation that would have told me, even if her air had not, that here was no countrywoman. The Contessa Paolina Scogli d'Illusioni Perduti, for such was her name and title, invited me cordially not to embarrass myself, but to remain for the actual sunset, a most beautiful occurrence in this part of the Apennines. The dear English speech sounded so sweet to my ears, and the Countess' voice was so gentle, that I needed no further excuse for staying. She was a descendant of the same Scogli whose history had been so frankly and faithfully set down in the volume from which I have already quoted, a work you may be sure I was careful not to mention, but in her seemed to be exemplified all the bright face of that history of which Fra Pietro gives only the



THE CHURCH OF SAINT CATHERINE, FROM THE GIARDINO PUBBLICO.

dark reverse. She knew, it seemed, certain acquaintances, almost friends, of mine in London and New York, and had stopped with people in the suburbs of Boston with whose names I could scarcely help but be familiar, since they occur almost diurnally in the column next the real-estate news of the *Transcript* and frequently even in that column itself. Thanks to her, I was enabled to see certain things closed to the ordinary tourist in Monteventoso, such as the cabinet of her ancestor, Count Tebaldo, in the Signoria below, with its carved and inlaid paneling and heavily molded and gilt ceiling, the flat spaces of which contained rather ill done pictures of the school of Francia, or the Gothic retable with its altar-piece by Signorelli, representing the Apocalypse, which, long sought by amateurs and dealers, had never, she thought, been exposed to their covetous gaze, since it was in the private chapel of one of her cousins, a lady so poor that we in America could scarcely conceive such utter impecuniosity, but so proud of her family's past — here the Countess smiled an apologetic smile — that were Mr. Vanderbilt or Mr. Morgan to come to Monteventoso, with the intent of purchasing the picture, they would be forced to return empty-handed, for the picture was literally priceless.

But it was not alone in things pertaining to her people that the Countess proved herself a *cognoscente*. She knew many of the dates of the different portions of the church, was not so inclined to smile at the thought of Charlemagne's having laid the corner-stone as I was, told me of a number of things I had quite overlooked in the church itself, and finally the legend of the vanishing frescoes in the crypt. In the dim past there was a monastery on the same spot, which antedated the present church by several centuries, and among the brotherhood was one, a scoffing, light-minded young man, who had come there not so much through penitence as through the desire of his father, a noble Venetian, to remove him as far from the scene and consequences of a particularly serious peccadillo as possible.

This young brother had some artistic pretensions, and so, alas! had the abbot, who had engaged some miserable, strolling painters to decorate the crypt. One day the superior and this youth were watching these men as they worked, when the latter broke out in a most unholy fit of laughter, and stated, it is to be feared with a certain oath more familiar among the gay young *garzoni* of Venice than among simple and God-fearing monks, that he could paint better in the dark than these men in broad daylight. The abbot's reproof at the time was gentle, but that night his patron, Saint Gemigniano, appeared to him in a vision and commanded that such godlessness should go no longer unpunished, and that the user of oaths be imprisoned in the crypt until he should have completed the work, which was therefore done, though of course not in complete darkness, since the pictures are sufficiently good to indicate that at least torches were supplied the youth along with the food, which was lowered to him daily.

When the Countess had finished the tale, which I have considerably condensed, I thanked her for her kindness and rose to bid her farewell. She was good enough to regret that my departure on the morrow would prevent her asking me to appear before her again at this time, but she trusted I would come again to Monteventoso. She was an old woman, and her poor house resented being left alone as much as she had been in the habit of doing, and no doubt she would be still in Monteventoso should I come, besides — she smiled brightly — who could tell, perhaps soon, even the following summer — for the ——s had invited her — I would come to Nahant to see her, and then I might tell her the legends of Boston. A reference to Peter Rugg here showed she knew them quite intimately already, and I had visions of employing Mr. Waterman as a tutor against her arrival. Then with a cordial handshake, I took my leave. After stumbling down the darkling pathway through the ilexes to the steps in the cliff, I turned again and looked back. All was still, and the thin crescent moon just touched with its finger of light the panes of the "windows fast and obdurate! How the gardens grudged me grass where I stood!"

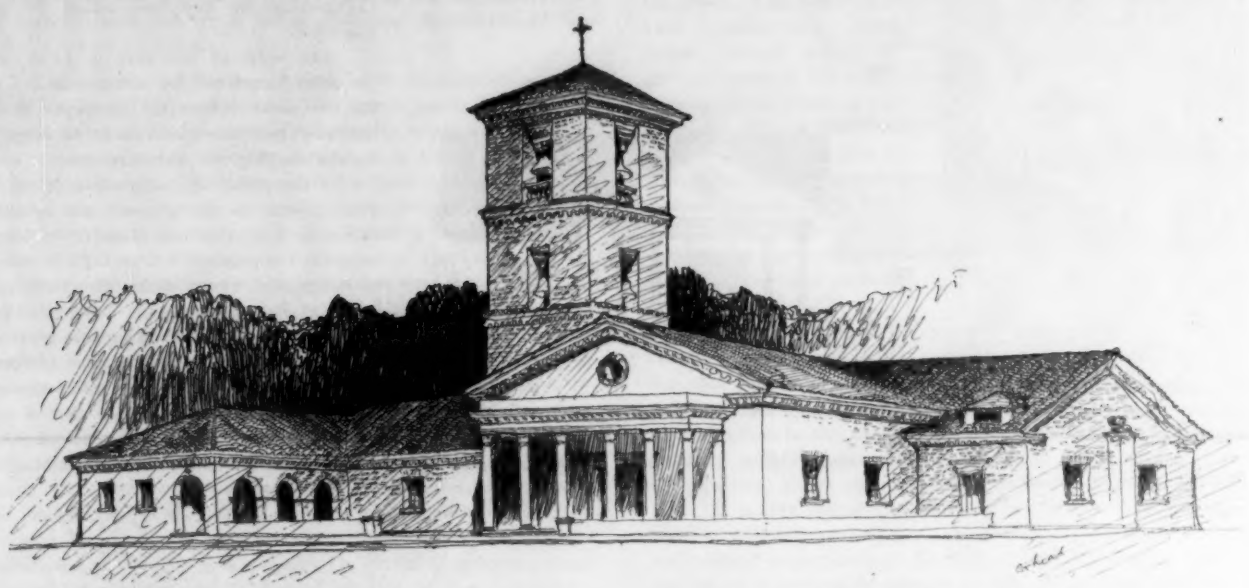
A Village Church, Cost Fifty Thousand Dollars.

BY ERNEST COXHEAD.

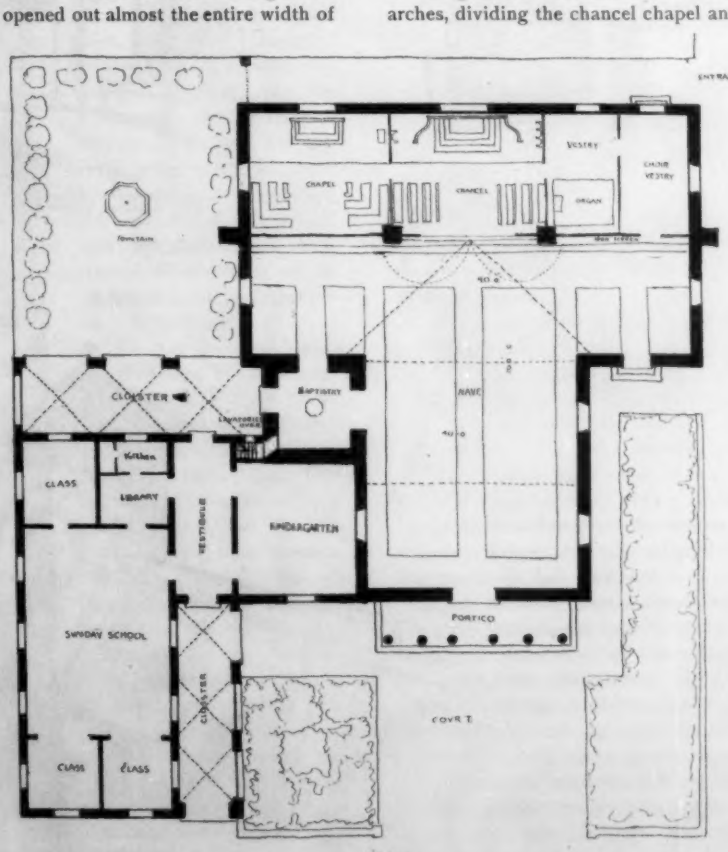
ECCLESIASTICAL architecture is architecture as we find it in church building. Popular taste in America indicates now and always has, in the best work, a preference and appreciation for what is classic, and it is naturally deduced that church building should have a character consistent with this prevailing temper, which has taken so firm a hold upon American favor. This is a plea for consistency in church architecture rather than the advocacy of any of the so-called styles. Until the revivals of the nineteenth century, it would seem, from reference to history, that the church has always sought to be pliant in this matter, maintaining harmony with contemporary tendency in art, which elevates in this connection the practical and utilitarian to its highest expression; the churches of the Middle Ages express this entire agreement between religious and civic buildings, and are stamped with the character that proclaims, without doubt, the inspiration of church building to have been also the art impulse of the people. Scholarly work will always show an avoidance of mere picturesque dilettanteism, and the church, always catholic, grappling as it must with the whims of the high, as well as ignorance of the low, should guard against pretense or any departure from the simple and honest, and can, by accepting the best aim in popular architecture of to-day, attain as great success as the master church builders of earlier periods. From east to west the early beginnings of church architecture in America show a native impulse toward consistency as the greatest practical need in this matter and unaffected acceptance of popular taste, as illustrated by the colonial churches and the Spanish mission churches of California; this harmony seems only to have been interrupted by a transitory wave of medievalism, whose term of enduringness must of necessity be limited.

The problem in hand is one easily recognized as a frequent demand of the times, and one which should incite the architect to undertake an unaffected part in the exercise of his skill. While serving with utmost simplicity the purpose for which it is ordained, the building should be stamped with a dignity and a repose that its focal relation to the village plan exacts. The nave of the church of to-day is differentiated from the nave of medieval times in that it is a space arranged for the comfortable gathering of a congregation; the relative proportions of the chancel to the auditorium, and the convenient accommodations for priest, choir, and people depending chiefly upon the degree of ritual observed. In this instance we have assumed that the service would be fully elaborated and that an unobstructed view of it throughout the building would be considered desirable. This object has been attained by roofing the nave with a low single span of 40 ft. Assuming that our church is to be located in a California village, roof timbers of the length and thickness requisite to carry a heavy Spanish tile roof of these dimensions would be easily procurable from the redwood forests. The rafters would be of irregular sizes, ranging from 10 by 10 ins. to 8 by 14 or 16 ins., and the tie beams holding the roof together would be say 18 by 30 or 36 ins., and would sustain themselves without trussing. The cross roof spanning the transepts and chancel, etc., would be constructed in a similar manner, except that being of a wider span than the nave roof, the rafters at the ridge line would be supported on three arches, the center one being the chancel arch. The rafters would be spaced 3 or 4 ft. apart and covered with 1½ in. planking, varying in width from 18 ins. to 3 ft. to the plank. The whole of the roof timbers to be rough hewn, and left without stain or varnish, — just as they come from the adze. The tie beams crossing the nave and the ridge beams afford opportunity for enrichment in the roof by carvings of a very bold and free nature, such as would be effectively seen at this height from the floor, and this enrichment, carried along the beams and the brackets supporting them, could be supple-

mented by broad dashes of color stenciled on the wood and carried into the moldings, all the woodwork first being charred to a brownish-black tone. The walls internally could be finished with plaster prepared for color treatment. The three arches supporting the ridge of the cross roof would be of equal spans, and a very rich ornamental



screen of wrought iron, almost wholly filling each arch, would separate the chapel chancel and vestries from the nave and transepts. The idea of this screen work is merely suggested in the sketch of the interior, but from the plan the general effect of such a screen can readily be imagined. The screen to the chancel arch is designed so that during service it would be opened out almost the entire width of the arch in two gates; that part above the horizontal bar supporting the rood or cross remaining stationary, and having much hammered leaf work. All the ironwork of these screens would be hammered and forged. The soffits of the arches and the piers supporting them should be terra-cotta or molded brick. To the east of these arches, the roof, following the lines of the gables, would slope down to the east wall, with a dormer window breaking through the roof opposite each arch to supplement the side lights of this end of the church. This arrangement of the roof over the chancel, etc., is unusual, but it has the advantage of greater simplicity, and consequently allows of a more elaborate and bolder treatment of the altar and reredos. The altar itself would set forward from the east wall, giving ample space on either side as well as in front. On either side of the chancel, and dividing it from the vestries and chapel, there is designed to be iron screen work similar to that under the arches. The organ is located on the south side and would stand free within the screen enclosures, so that its sound would be carried equally to all parts of the church. It is not intended that the clergy vestry should be anything more than a place for routine official work to be done, so that a pastor's study would be provided elsewhere. The chapel, designed to seat about forty, is in most Episcopal churches now found to be of the greatest convenience for daily services. In front of the arches, dividing the chancel chapel and vestries from the nave, there are shown to be two stone steps extending from transept to transept. The sanctuary floor is again raised above these several steps to give the altar proper elevation.



PLAN.

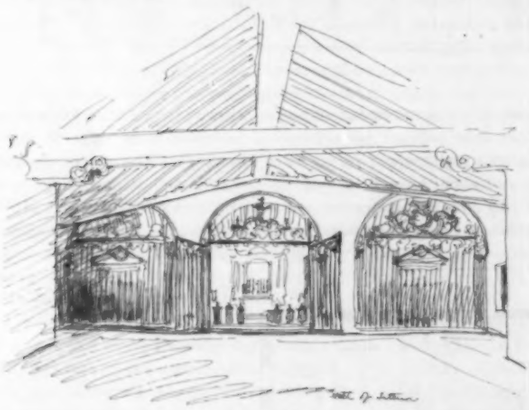
The lower part of the tower, while serving as a vestibule and connecting link between the Sunday school and nave of the church, also affords opportunity to place the font by itself. The tower entrance gives access to a cloistered garden at the northeast corner of the lot,—a pleasant breathing space for clergy and congregation before and after service. This garden might also be used in fair weather for open-air Sunday-school services, etc. In the upper chambers of the tower would be suspended the bells, with the bell-ringer's room below.

The details of the arrangement of the Sunday school are more a matter of individual preference,

WEST ELEVATION.

and in this plan the endeavor has been to comply with the more usual demands.

The floor of the entire church and Sunday school would be



laid in concrete, finished in the case of the aisles, in nave and chancel, with stone flags in large squares, and elsewhere under the seats and in the Sunday school with wood blocks bedded in asphaltum. This method would render the floors permanent and noiseless.

Externally, the walls would be faced with *klinkered* or overburned burred common brick, laid with large joints, with terra-cotta or molded brick for the cornices, etc.

The tile used for the roof would be the large, half-round, dark Spanish tile, glazed.

With a view to the more or less secular functions for which the Sunday-school building is at times used, it was thought better to locate it at the west end of the lot, as far as possible from the precincts of the chancel. The relative position of the Sunday school to the church has a symbolic significance, as it is here that the young are instructed before entering into the full privileges of the church. The principal entrance is from the west, facing the park or plaza, and here a simple Corinthian portico, 30 ft. wide and 24 ft. high, is provided to give protection from the elements and shade the entrance. The cloisters, garden court, and front court would be paved with hard brick laid edgewise in ornamental designs.

In the matter of external design, much has been left to the nature of the material used to supply animation and interest. This the rough quality of the klinker brick, in combination with a bold rich cornice and the picturesque sky line, would do adequately.

The width of the nave is 44 ft., and the total length of the church inside 100 ft., the width across the transepts 90 ft., the height of nave from floor to ridge 36 ft., and the height of the tower 86 ft.

If the principle that endurance of his work should be the foremost aim of every architect, applies to one class of buildings more than to another, it is perhaps in church buildings that effort in this direction is to be specially encouraged. Good building lends tangibly to the moral support of every institution, individual, or enterprise so fortunate as to possess a habitation, and inasmuch as that in almost every community the church has its field of usefulness, it should have, as a power to promote the best effort in architecture, few if any rivals. The backbone of every building is

made up of walls and roof. Style follows upon proper observance of the principles of sound construction, and beauty comes with convenience and proportion.

Brick and Marble in the Middle Ages.

BY G. EDMUND STREET.

CHAPTER X.—*Concluded.*

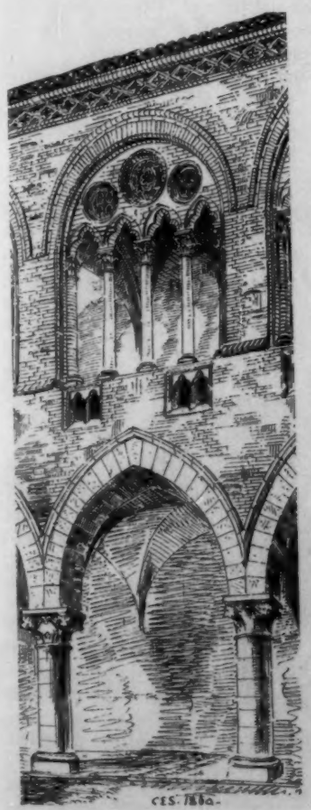
[The illustrations A, B, C, D, E, F, and G are not taken from Mr. Street's work, but are added as additional illustrations of the Italian brickwork.— EDS.]

WE soon reached Pavia, and were, as we expected to be, well rewarded by its churches. The general aspect of the city is singular, owing to the number of tall slender brick towers which seem to have formed a necessary appendage to almost every house in the Middle Ages. They are entirely without openings or ornaments of any kind beyond the scaffold-holes, and one can compare them to nothing that I know so well as to the great shot-tower at Waterloo Bridge, save that they are always square and not circular.

We did our best to see the cathedral, but were unsuccessful; it was being repaired, and was so full of scaffolding that we could see nothing. It contains a shrine said to contain the body of S. Augustine, which I much wanted to see, but seemed in most respects to be an unprepossessing church.

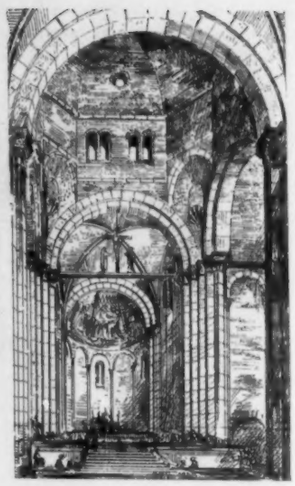
From the cathedral we found our way to San Michele, a very celebrated church, and as interesting to an antiquary in search of curiosities as to an architect in search of the beautiful. The west end is very curious, and has a succession of sculptures, introduced in the most eccentric manner, and with but little method in their arrangement. There are three western doorways, and all of them are elaborately ornamented with carvings, the central door having above it a very singular figure of S. Michael.

San Michele, together with San Teodoro and San Pietro, seem all to be of about the same date, and are of the same character; the most remarkable feature being in each case the octagonal cupola, which rises above the crossing of the nave, choir, and transepts: externally these cupolas are arcaded all round under the eaves, and roofed with flat-pitched roofs, and are far from being graceful; open arcades are introduced under the eaves and up the gables, and everywhere there is a profusion of carving. It is likely enough that this Lombard-Romanesque style, as we see it at Pavia and elsewhere, did, as has been supposed, set the example which was very soon after followed in the great churches at Köln and elsewhere along the borders of the Rhine. In size, however, the children far exceeded their parents, for San Michele is not remarkable for its dimensions, except in the width of the transept.

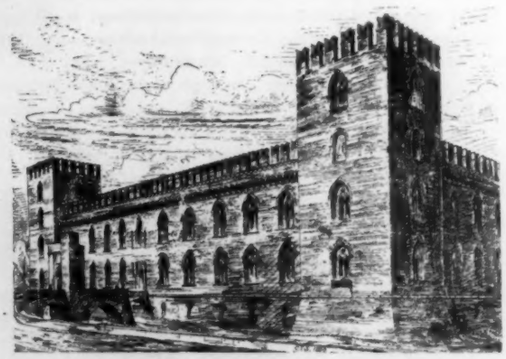


CASTLE, PAVIA.

The church consists of a nave and aisles of four bays, a transept of great length, a central lantern, and a short choir with circular eastern apse; small apses are also built in the east walls of the transepts. A fine crypt is formed under the whole of the eastern arm of the cross, and is entered by steps on each side of the thirteen steps which lead up to the choir. The nave aisles have a second stage or triforium, groined throughout; and the whole of the church is vaulted, the transepts having barrel vaults and the three apses semi-domes. The internal effect of the lantern is extremely good; the pendentives under the angles are very simple, and low windows are introduced in a stage between them and the octagonal cupola or vault. The whole church is still left in its original state with red brick walls and stone piers and arches, save where, as in the eastern apse, the vault is painted with a Coronation of the Blessed Virgin, executed in the fifteenth century. It is very seldom, consequently, that a church of this age is seen to so much advantage; and undoubtedly the fine, simple, but well-ordered arrangement of the plan, and the dignified character of the raised choir and the central lantern, would, even if the colour were not as picturesque and agreeable as it is, make this interior one of extreme interest. One of the best portions of the exterior is the east end. Its extreme loftiness is enhanced by the groups of shafts which divide it into bays, and rise from the plinth to the cornice. This part of the building is mainly of stone, except in the fine gallery below the eaves-cornice, where brick and stone are used together. In addition to the west door already mentioned, there are two very elaborate doorways north and south of the nave in the bay next to the transepts.

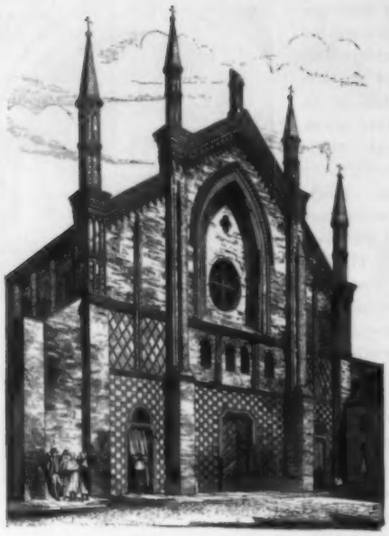


SAN MICHELE, PAVIA.



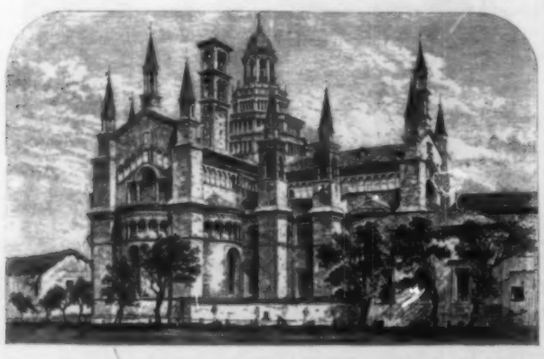
CASTLE, PAVIA.

San Michele is, on the whole, the most interesting building in the town, but is hardly superior to the grand remains of the old fortified castle of the Visconti, which stands just on the outskirts of the city, close to the Milan gate. This is only a portion of the original erection, only three sides of a great quadrangle which is inclosed by the building now remaining. The plan originally was a vast square with lofty square towers projecting at the angles, and of these only two remain. The whole front is still very nearly perfect, and is not far from five hundred feet in length, the main building of two stories in height and the towers of four, and all the old windows more or less intact. The whole is crowned with a forked battlement, and the



WEST END, S. FRANCESCO, PAVIA.

old bridge still remains opposite the entrance with its outer gate, though the drawbridge has given way to a fixture. This grand pile is now used as a barrack; its most valuable architectural features are all towards the internal quadrangle, which is of grand dimensions, more than three hundred feet in the clear. Towards this court there is the same sort of arrangement throughout (though many modifications of detail) — an open arcade of pointed arches below, and a series of fine windows lighting a corridor above. The lower arches are of stone, everything else of brick, and the details everywhere are refined and delicate almost beyond those of any brickwork that I know elsewhere. The original scheme is best seen on the south side of the quadrangle, of which I give an illustration. This work dates, I suppose, from about A. D. 1300, but it was soon found to be inconvenient to have open traceries for the upper corridor, and the arches on the other two sides were filled in before the middle of the fourteenth century with very good two-light windows. Fortunately the whole of this work is still in very excellent preservation, and deserves much more notice and study than it has ever, I believe, received.[1] The ordinary bricks used here measure 10½ in. × 5 in. and are 3 in. high, whilst in San Pantaleone they are 3½ in. high and as much as 15 in. long. Here (as generally in the centre of Italy) the bricks have all been dressed with a chisel, with which diagonal lines have been marked all over the face. I can only assume that this has been done to improve the texture of the bricks in appearance, and, perhaps where two bricks are side by side on the same plane, to make a little distinction between them by tooling the bricks in opposite directions. Two other features of Pavian brickwork may also here be mentioned: one, that the depth of the arch-bricks is almost always increased from the springing line to the centre — the intrados and extrados not being concentric; the other, that the arch-bricks do not radiate from a centre, but are arranged so as to obtain a vertical joint in the centre. The first is a very defensible practice, the second seems to me to be the contrary.



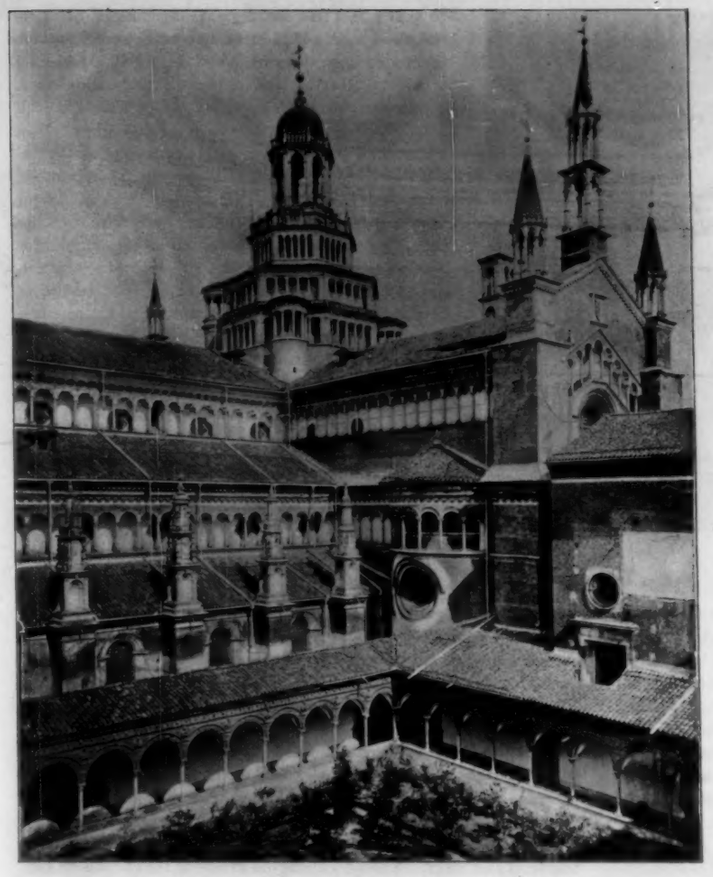
THE CERTOSA OF PAVIA.

[1] Mr. Grüner has published some very careful drawings of these details, in which he has restored the painted decorations with which the coloured construction of the walls was enriched. The style of decoration was much like that of Sta. Anastasia, Verona.

WEST FRONT, S. PANTALEONE, PAVIA.

There are several other churches to be noticed here. The most interesting to me after San Michele is that of Sta. Maria del Carmine, or San Pantaleone (for it seems to rejoice in a double dedication), which, in some respects, is more akin to our northern Gothic work than any other Italian church I have as yet described. The plan and all the details of the interior are exceedingly simple. The nave is divided into four groining bays, each of which has two arches into the aisles; the transept takes one bay and the choir one, and there are an aisle and a row of chapels on either side of the nave, and chapels on the east side of the transept. The only openings between the arches and the groining are small circles by way of clerestory, ludicrously small as compared with the immense

(A) DOOR TO CHURCH FROM CLOISTER, CERTOSA, PAVIA.



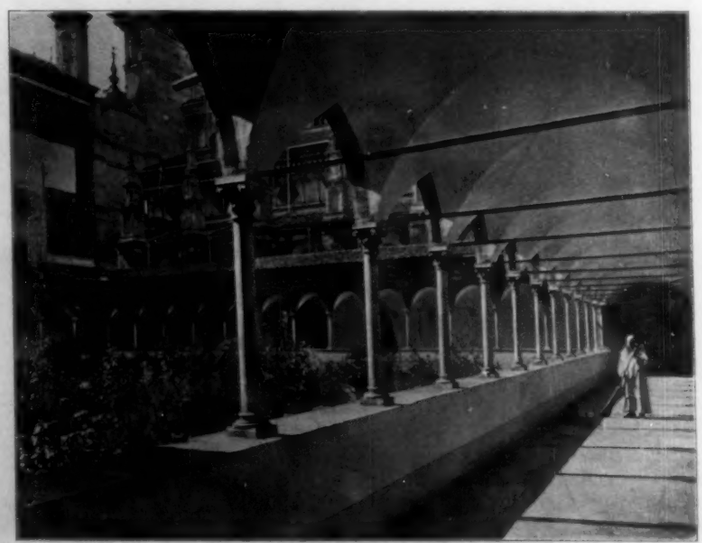
(B) CERTOSA, PAVIA.

space of blank wall below them, which seems to call loudly for decorative painting. The whole of the interior is executed in red brick, which has, however, been much daubed with a coloured wash; its effect is, notwithstanding, very fine and well worthy of imitation. As in Italian churches generally, the choir is very short as compared to the length of the nave. The exterior is even better worth examination than the interior; the design of the west end is an exaggerated example of the mode of finishing west fronts not uncommon in Italian Gothic; it is to some extent a sham, and therefore bad, but there is much which is of value in its detail, as it is even more than usually elaborate; and apart from the general outline of the mass, which pinnacles and pilasters cannot redeem from ugliness, there is considerable beauty in the group of windows and doors arranged so as to rise gradually to the centre. The cornices are very heavy and elaborate, and the whole front may be looked at as a masterpiece of terra-cotta and brick architecture. It is purely Italian in its great breadth and general arrangement, and, I confess, very far from being to my taste, though I could wish that we had more often some of the same breadth and simplicity in our own elevations.

It is very curious that this west end is the only elevation in this church which is at all distinctly Italian in its design; for those of the transepts and choir might much more reasonably be put down as imitations of Northern work; they are very similar, and a description of the latter will therefore suffice. It is flanked by massive buttresses, and has two large and lofty trefoiled lancets, surmounted by a circular window of great size; the whole is very richly moulded and executed entirely in brick. The buttresses and roof finish at the top in a rude temporary-looking manner, and it is therefore impossible to solve the interesting question of their original terminations, which must, I imagine, have been pinnacles. The ordinary bricks used here are about 10 in. × 3 in. in size, and laid with very wide joints of mortar; those used for window-jambs and arches are of much deeper colour and finer clay than the others. There is something quite refreshing in coming suddenly and unexpectedly upon such a simple and English-looking elevation, after the multitude of thoroughly Italian fronts it has been our fate to see lately.

On the north side of the nave there seems to have been a fine row of pointed windows, but they have been all destroyed to make way for Renaissance improvements. There are very large buttresses dividing the bays in this aisle — a feature which is unusual in Italy, and which, in addition to the design of the choir and transepts, would seem to show that this church was not entirely the work of an Italian. In the plan, too, it is remarkable that, though the general arrangement is quite that of the large Italian churches, such as the Frari at Venice and Sta. Anastasia at Verona, in one particular it is unlike them. The groining bays of the aisles are square, and not oblong; and as two of the aisle arches make one bay of the nave, the groining compartments in both are as nearly as possible square. This is an arrangement which occurs often in German Romanesque, but is not seen so often in Italy.

There is a fine campanile between the south transept and the choir; it has four stages above the roof of the church, and scarcely any opening below the belfry windows; these are exceedingly good, of three trefoiled lights under an inclosing arch, with two plain circles pierced in the tympanum, the monials being shafts of white marble. A low spire of circular bricks finishes, but does not improve, this



(C) CLOISTERS, CERTOSA, PAVIA.

(D) ARCADE FROM THE CLOISTERS, CERTOSA, PAVIA.

very beautiful belfry. There is another brick pointed church at Pavia — San Francesco — which has a fine west front redeemed from the common Italian character by the grand window-arch in its central division; and though this has been filled in with later and barbarous work, to the entire concealment of the tracery, its effect upon the whole front is astonishingly good. The detail is very elaborate, and in the arch a great number of terra-cotta ornaments are introduced. The front is divided by large pilasters into a centre and wings corresponding with the nave and aisles, but these are again subdivided by smaller pilasters, each of which is composed of three circles on plan, and finished rather nicely with a kind of finial at the top.

San Francesco is lighted by a succession of small clerestory windows, and the aisles have large buttresses, the greater part of the upper portion of the west front being a mere mask to make out the desired outline. I begin really to wonder whether I shall see a west front before I leave Italy which is not a purely unnecessary and unprepossessing sham!

Pavia is a busy and a pleasant city, and one that improves on acquaintance; it is true that it was very hot and sultry, but to this I have been fairly acclimatized, and so rather enjoyed it, except when a piazza had to be crossed in the sun, or a walk to be taken along a street unprotected by arcading, which by the way is much rarer here than in Padua, Mantua, and other cities which I have been describing. The main street of the city is very picturesque, with somewhat of a fall towards the south, so that just a glimpse is obtained between the houses of the distant Apennines.

From Pavia we went, on our road to Milan, to pay a visit to the renowned Certosa. The road thither, which is also that to Milan, pursues a monotonously straight course by the side of a canal, or canalized river, and between rows of stiff trees, until, about four miles from Pavia, a turning at right angles out of the main road soon leads to the gateway of the monastery, and through this — which stands open apparently rather through carelessness than out of hospitality — we drove into the courtyard in front of the church. This, grown all over with weeds, looked certainly very desolate and wretched, and but a poor preface to the polished marbles of the west front, and the riches and paintings of the interior of the church.

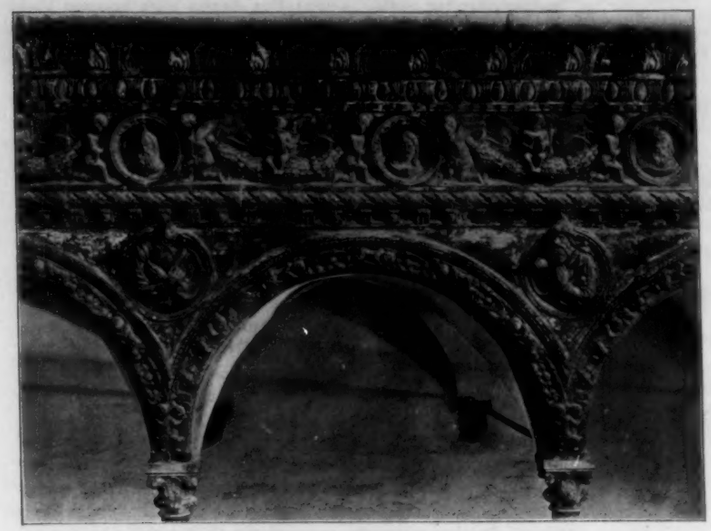
The west front is of great magnificence of material, though of a kind of design which seems to have proceeded upon the principle of setting all established architectural styles and customs entirely at defiance. This indeed may be said of the whole church, which is a kind of mixture of Lombard-Romanesque features with some Gothic, and no slight dash of the Renaissance spirit; altogether a most magnificent hybrid, but certainly a hybrid. The doors stand wide open, and from the decaying and desolate court in front of the church we enter into the nave, full of everything that is magnificent in material, and all preserved with jealous care and in admirable order; we look up to the lofty vault which spans the grand width of the nave, and find the groining ribs arched overhead in pure pointed form, and cannot help marvelling how far this one pointed feature harmonizes — I had almost said sanctifies — the whole interior, though in fact, save this one point, there is scarcely a single detail throughout the church which would ever pass muster as really being of Gothic character.

I think it is hardly possible to scan or criticize the architecture of such a building; it is better to follow the guidance of the cicerone, and look at the pictures behind the many altars set around with precious stones, and inclosed within reredoses made of such an infinite variety of marbles, that, with some degree of envy, one thinks how precious such an array would be on this side of the Alps, even if spread through fifty churches.

The nave and aisles are divided from the side chapels and from the transepts by high metal grilles, and the transept is again divided by another screen from the choir: this produces a very singular and unusual effect, and makes the transept appear somewhat like a nave placed at right angles to the choir. All the chapels on either side of the nave communicate with one another, so that the monks are able, without entering the nave, to obtain access to all of them, whilst females are carefully excluded both from the chapels and from the transepts and choir. Except a Perugino in one of the chapels on the north side of the nave, and one picture in the sacristy, there seemed to be no pictures of any very great value; in fact, travellers are asked rather to admire the value of the stones which are used in the altars, and the marbles in the reredoses behind them, than the paintings

(E) ARCADE FROM THE CLOISTERS, CERTOSA, PAVIA.

which they inclose. The groining of the church, enhanced as it is in effect by the way in which it is painted — with a blue ground,



(F) ARCADE FROM THE CLOISTERS, CERTOSA, PAVIA.

powdered very richly with gold stars — conduces more than anything else to the very fine effect of colour which the nave produces; and the beautiful pavements, composed mainly of red and white marbles, laid in elaborate geometrical patterns, increase not a little the general effect. This is an instance of the superiority of decorative painting over pictures as far as improvement of architectural effect is concerned.

South of the church are two cloisters; that nearest to the church of ordinary size, but the other, to which it leads, prodigious in its dimensions, and very singular in its effect, being surrounded at regular intervals by the houses of the monks rising out of and above the regular line of the cloister roof. I went into one of these houses, and found its accommodation exceedingly ample; three rooms, closets, and a garden being provided for each monk. The arches of the cloisters are exceedingly rich in terra-cotta ornaments, and throughout the exterior of the church and other buildings it is remarkable how very elaborate these ornamental mouldings are; they are left in the natural reddish colour, and, as the walls are white-washed, they have a very singular effect. We found here, as at other places, men busily engaged in making casts for the Crystal Palace at Sydenham, whose managers certainly seemed to have ordered casts of everything that could be modelled throughout Europe!

There are now[1] twenty-five monks at the Certosa, and the number appears to have been gradually on the increase since the reconstitution of the monastery in 1844; it was certainly very gratifying to see that, whilst all the rest of the buildings looked forlorn and dilapidated, the church itself was most scrupulously well preserved, presenting in this respect a great contrast to the fate of monastic churches generally in the north of Italy.

A tedious drive by the side of a long straight canal, passing on our way large well-managed farms and other signs of uncommon agricultural activity, took us from the Certosa to Milan; and long before we arrived there the white pinnacles of the Duomo, with the Alps in the far distance, came in sight; certainly, seen thus, the Duomo is one of the least satisfactory or imposing great churches I have ever seen, and does but little in the way of imparting character — as most cathedrals do — to the city which lies at its foot. At last we reached Milan, and entering through a triumphal arch — the Ticinese Gate — and passing the front of Sant' Eustorgio, we threaded our way down a very long narrow street, by the side in one place of a row of Roman columns, still standing tolerably perfect in the midst of the crowded highway, until at last we found ourselves housed in a more luxurious hotel than it has been our fortune to meet with for some days.

[1] This was written in 1855.

(G) LAVABO, CERTOSA, PAVIA.

GARDEN WALLS OF BRICK.

TRAVELERS to the Old World are often surprised and pleased at finding the use of brick so general, wherever it is possible to employ them. They are in evidence in street paving, in sidewalks, in curbs, in floors for cottages, floors for barns, poultry houses, factory floors, gate posts and fences, and wherever used are so arranged and chosen as to appear as if nature had intended the brick and nothing else to serve the purpose.

The old garden walls and dividing fences, which still show the limits of the domain belonging to the old ruins, are chiefly of brick, coped with stone or slate, and many of them to-day are in a good, serviceable condition, though they have done service, in some instances, over seven hundred years. The Cathedral of St. Albans, which is one of the oldest in England, is built of brick, as are some of the walls surrounding it, and the curb of the great well was also built of brick of Roman make, brick that have had the conflict of wind and weather, battle and breeze, for upward of fifteen hundred years.— "*Architect*," *in Clay Record.*

Fire-proofing.

SOME DEDUCTIONS FROM THE EVOLUTION IN FIRE-PROOF CONSTRUCTION.

BY CORYDON T. PURDY.

BUILDINGS that could not easily be destroyed by fire were constructed in very ancient times, and the notion of using materials and methods of construction, having this particular object in view, is therefore a very old one. The words and phrases expressing the art, now in common use in the English language, came into that common use, however, only about the middle of the present century, when they signified practically the same as they do now.

The Romans built a massive construction of brick and concrete with masonry floors and groined arched ceilings, sometimes covering very wide spans. Partitions, as we understand the word, were practically unknown. Division into rooms was accomplished by thick masonry walls, similar in character to the exterior construction. There was little or no combustible material used and the buildings were practically indestructible. When floors were supported by timber, the heavy beams generally used were exposed in the ceiling, but the final floor construction was invariably masonry finished with concrete, stone, or tile. The essential constructive features of this architecture were, of course, much older than the Romans, but they gave it permanence and character, and the construction was copied in later times throughout southern Europe and, to a considerable extent, in the tropical Spanish countries of America.

In northern Europe, however, and in the United States and Canada, where timber was more available, and the climate was better suited, and the commercial demand was not so much for permanence as for immediate use, wood was always used to a much greater extent. On this account fires have always been more prevalent in London than in Paris, and in America more than in Europe.

Up to the end of the eighteenth century wooden beams were used almost exclusively in these parts of the world for floors and roof construction, even in the largest cities and most costly buildings, but they were often, especially in northern Europe, combined with concrete materials or clay products, to secure a partial protection from fire. As cities grew in importance and fires became proportionately more destructive, the importance of fire protection was emphasized. Either the southern methods must be followed, or newer methods must be made indestructible, or greater dependence must be had on a protective service. So it seemed to them in that day, and though we have progressed greatly in experience and knowledge since then, the question is much the same even in this day.

The English Parliament appointed a committee about 1775 to investigate the question. However, little good came of it, and it was really not until the middle, or near the middle, of this century that the English were thoroughly aroused to the importance of the question in their own country. The London fire officers tried for years to secure better methods of building, and English architects and technical papers discussed the matter at great length. Practical and economic considerations gave character and force to this agitation. In Paris the methods of building had been more conservative, and losses by fire had been less; but in these same days they also were theorizing and experimenting and equally as ready as the English to improve their methods.

Cast-iron beams and brick arches began to be used in the beginning of the nineteenth century and up to about 1850 they were used extensively in the best buildings in England, France, and Germany. It is this period that gave birth and importance to the experiments and investigations into the strength and other characteristics of cast iron, much of which is now of little importance to the architectural and engineering world. Rolled iron beams were invented about 1850, and within a very few years were being manufactured and used in all the leading countries. In America, they were first rolled by Peter Cooper, at Trenton, N. J., in 1854. From the beginning they were used to carry the floors of buildings. It did not then seem possible that a fire could gain sufficient headway to materially injure them. No one anticipated that it would be necessary to cover them, and it was confidently predicted by both the fire officers of London and by English architects generally that they would solve the problem, and that the rolled beams carrying brick arches would make perfectly fire-proof floors. About fifteen years later, however, such construction was condemned by the same fire department. Many floors were constructed, both in England and on the Continent, in warehouses and other important buildings, with the rolled beams exposed on the bottom, and in every great fire the destruction was complete. The idea that the rolled beams could be completely protected and that this protection was really the essential element of all fire-proof construction, involving rolled beams, was comprehended very slowly. In 1866, a Frenchman obtained a patent involving as one feature a method of covering the bottom of the beam with burned clay material. The soffit tile in common use in America is an American invention, made in 1883. The recent substitution of steel for wrought iron has not altered the fire-proofing problem, but has materially widened the limit within which structural material may safely be used.

The use of plaster of Paris beton and cement concrete with wood, to secure a construction much less liable to burn than an all-wood construction, grew greatly in favor in the latter part of the eighteenth century and the first part of this one. After rolled beams were invented, similar methods in combination with iron continued to be employed both in England and in France, especially in buildings for dwelling-house purposes, but the chief dependence in important buildings was then, as it has continued to be, in brick arches or their equivalent. Most improvements in burned clay products were born in Europe and developed and perfected in detail and made practical in America. Not only were the inventions covering the

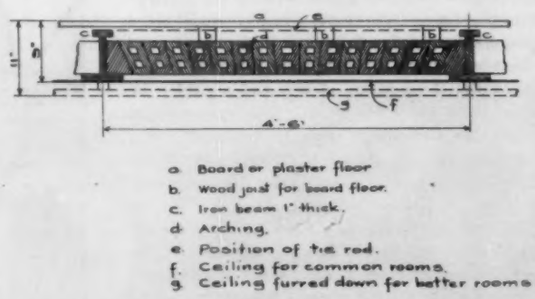


FIG. 1.

important principles of fire-proofing construction first taken out by Europeans, — English, French, and German, but if the records are correct, they were for the most part first put to practical test in those countries.

Though it has been repeatedly stated to the contrary, the first flat hollow clay tile arch is older even than the rolled beam, and of English construction. An account of this arch was published in England in 1854 It is stated that about 15,000 sq. ft. of such arches resting on cast iron beams were constructed in a lunatic asylum known as "The Retreat," belonging to the Society of Friends, in York, England. The beams were 4 ft. 6 ins. to 5 ft. apart, and the whole calculated to carry the dead load and a reasonable live load, in the usual way then, and equally usual way to-day. Fig. 1

shows a section of this construction as given by the author, Mr. Pritchett. But this is not the only interesting feature of this record, for he testifies to an even very much earlier construction of flat arches in floors. "I first adopted this mode of arching," says the writer, "in the erecting of the pauper lunatic asylum, at Wakefield, in 1817: an account and section of which was published in 1819, with the plans, etc., of that building. These bricks were not hollow, and the size was limited by the Act of Parliament, but at 'The Retreat' they are 12 ins. long, and of the size and shape shown in the drawing. The arches weighed, when finished, 31 lbs. to the superficial foot, and cost in York 16s. per square in mortar and 25s. in cement. The soffit is very nearly flat. I used to allow an inch of camber, but found the settlement so very small that the camber occasioned a waste of plaster, as nearly all the buildings at Wakefield were finished flush with the beams. At 'The Retreat' the beams are beaded on the edges to quirk the plaster to, except in the best rooms, where light ceiling joists are used. Where the arches abut against internal walls the springing bricks are walled in, but in outer walls they spring from a light iron beam in the wall, to which tie rods are attached to prevent thrust till the whole gets set and becomes one solid mass."

The first use of special hollow burned clay material in America was in Cooper Institute, in 1855, but in this case single pieces were used reaching from beam to beam. The first hollow flat arches, similar to those used by Mr. Pritchett, were not used in America until 1873.

And so the features of construction that relate to fire protection have improved through all this century. It has not been a very steady progression, though it has been a definite one. Here and there an enthusiast has dreamed of a better thing and labored to materialize it. In the same indifferent manner science has helped it. Demand and supply has also figured as a creative force, though probably the former was always as inactive as it is now. As a rule the demand is not for the best, not for that which signifies growth, but rather for a moderate degree of protection limited by the expense of it. The supply, too, has often been of like character: the manufacturer has not always cared so much to provide improved products as he has to make those he could sell to the best advantage. There have been decades of growing and decades of standing still. One nation has suggested while another has developed.

In the present decade the spirit of progress has received a great impetus. Every feature of construction is being experimented with as never before, and the public is demanding of those who are especially interested exact information more than in any previous period.

A proper conception of the problem must always depend upon a full understanding of the characteristics of all the materials entering into the construction of buildings, and also of what might be called the general constructive principles governing their design. The development of the art in the future will depend upon the growth of our knowledge along both lines. The more complete this knowledge, the more perfect the conception.

Regarded from the point of resistance to destruction by fire, there are really two quite different classes of construction, and we need first of all to thoroughly appreciate the distinction between them. In one the fire-proof qualities are dependent upon the effectual construction of solid masonry, brick, and stone, while in the other they are chiefly dependent upon what we ordinarily call "fire-proofing materials." The former might be termed a "massive construction," while the latter is widest known as "skeleton construction." It is interesting to note in this connection that this expression was first suggested by a comparison with the human frame clothed with all that gives perfection, presumably made for the first time in a discussion at a conference of the Royal Institute of Architects in 1877, long before this method of construction had taken shape in American designing. In the United States it was probably first used in print by Mr. Wellington, former editor of the *Engineering News*.

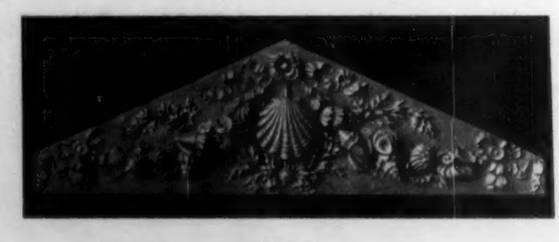
(*Continued.*)

Brick and Terra-Cotta Work in American and Foreign Cities, and Manufacturers' Department.

NEW YORK. — At this midsummer season, when business is dull in every line and there is consequently little new work to report, it is interesting to look over the work of the past half year and to draw a few comparisons. From January to June there has been a gain of 66 per cent. in the amount of money invested in building operations in New York over the corresponding period last year. This shows very clearly that the general improvement in business throughout the country is stimulating business activity.

TERRA-COTTA DETAIL.
Executed by the Perth Amboy Terra-Cotta Company, for the Rittenhouse Apartments, Philadelphia.
Willis G. Hale, Architect.

In a total increase of about $37,000,000 for the twenty leading cities of the country, over $30,000,000 of that amount is credited to Greater New York. As a center of building operations the metropolis dwarfs any other city in the country very decidedly. It is equal to more than six Chicagos and seven Philadelphias. Of course, not all of the $84,000,000 worth of new buildings projected in New York will be instantly carried out; and even with the big proportion that will be promptly undertaken, some time must elapse before the money expenditure involved will be distributed for labor and materials. But the statistics are the forerunners of actual activity. They may safely be taken as the beginning of unusually brisk conditions. We have had further successful tests in this city showing how our tall buildings can be of benefit in fighting fires in their neighborhood. Judging from the success of these tests, when seven streams



PANEL.
Executed by the White Brick and Terra-Cotta Company, for residence at New Rochelle, N. Y.
Clinton & Russell, Architects.

COUNTING HOUSE, THIRD AND CHESTNUT STREETS, PHILADELPHIA, PA.
Wilson Eyre, Jr., Architect.

were thrown simultaneously across Broadway from the standpipe in the St. Paul Building,—one from the roof, while six branch lines were in full operation below,—it was shown not only that two of the largest steam fire engines in use by the fire department of this city can draw sufficient water from one hydrant to fight a fire, but also that a fire in one of these tall buildings—provided it is properly equipped with a standpipe—can be fought and extinguished without any more difficulty than is met with in putting out a fire in a structure whose height does not exceed the average. More water than was being used could have been pumped to the roof by the two engines, one of which had to be stopped during the second part of the test, as too much water was pumped for the outlet, and fifteen lines could have been employed and as strong a stream obtained as with the seven actually used. Under these circumstances, it would seem that legislation should be obtained whereby the owners of high buildings should be compelled to put standpipes where at present there are none.

The movement to secure proper park treatment to the seven acres of land given to Brooklyn by the town of Gravesend fifteen years ago for park purposes is a good one and ought to be successful. This is not a case where the city has to buy land through a tedious legal process, but where it already possesses a suitable tract that can be turned into a park at a moderate expense. This piece of property is located at the end of Ocean Boulevard. It faces the ocean and extends from 18th Street to Brighton Beach.

Plans are being prepared in competition for a new office building, to be erected at Broad, New, and Wall Streets, for the New York Stock Exchange. Among those competing are Bruce Price, George Kramer Thompson, and George B. Post. De Lemos & Cordes have planned a six-story brick and stone department store, to be built on Sixth Avenue, between 21st and 22d Streets, for Adams & Co.; cost, $1,250,000. Carrere & Hastings have prepared plans for a brick and stone dwelling, to be built on 89th Street, near Fifth Avenue; cost, $75,000.

PHILADELPHIA.—So much is said about civic pride by hopeful advocates of higher architectural achievement in public buildings in Philadelphia, without, seemingly, unsettling the calm composure of city officials, that it is noteworthy that in one department of city work a proud glance may be cast over recent improvement. A few years ago, the fire stations, engine houses, truck houses, and all, in this good, strait-laced city, were a horror to behold, from an architectural standpoint. The fire department has always stood high for efficiency, but it was housed most ignobly. Old buildings, too unattractive to rent longer as stores, were fitted up in good order inside, but outside, with the addition of a funereal row of cast-iron boxes in the main front, standing slimly between the wide doors, nothing was improved, and so was had an engine house.

Since Mr. Windrim, the architect, served a term as director of public works, a change set in, and now architects as prominent as

COUNTING HOUSE, THIRD AND CHESTNUT STREETS, PHILADELPHIA, PA.
Wilson Eyre, Jr., Architect.

GATEWAY, JESUS COLLEGE, CAMBRIDGE, ENGLAND.

Edgar V. Seeler and James H. Windrim design many of the new buildings for the department, so that if the present system prevails, in a few years the engine and truck houses should be noted, not for their dingy ugliness, but for their suitable and proper architectural character.

Possibly in nothing so much as public school buildings is the need of architectural reform in evidence. Putting aside the huge granite high-school structures, which are not such as to educate the student in things esthetic, one fails to note in the average school even the attempt at architectural treatment. This state of affairs is undoubtedly to be attributed to the system under which all architectural work, if such it may be called, is turned out by a bureau of the board of education, the chief position in which offers a salary so small as to be no temptation to an architect of high ability.

The approaching Grand Army Encampment in Philadelphia has caused the city to form the project of another "Court of Honor" on the order of that of last winter, this to have the high-sounding title of "Avenue of Fame."

The inflated price of steel is having a marked effect on building speculation. The proposed new hotel on the site of the Girard House lags, apartment and office building plans await the downward turn of the market, while builders have great difficulty in getting small orders at any price.

The University is still adding to its large group of buildings. The huge Law School by Cope & Stewardson, in all the brightness of white stone and red brick, stands ready for the roof, and estimates are asked for a large addition to the dormitory system, in architecture agreeing with that of the initial portion finished some four years ago. The closing side of the triangle is now to be built, with a tower as a memorial to University students lost during the war with Spain.

A gymnasium for the college is projected, and numerous club houses connected with the University are building in the University quarter.

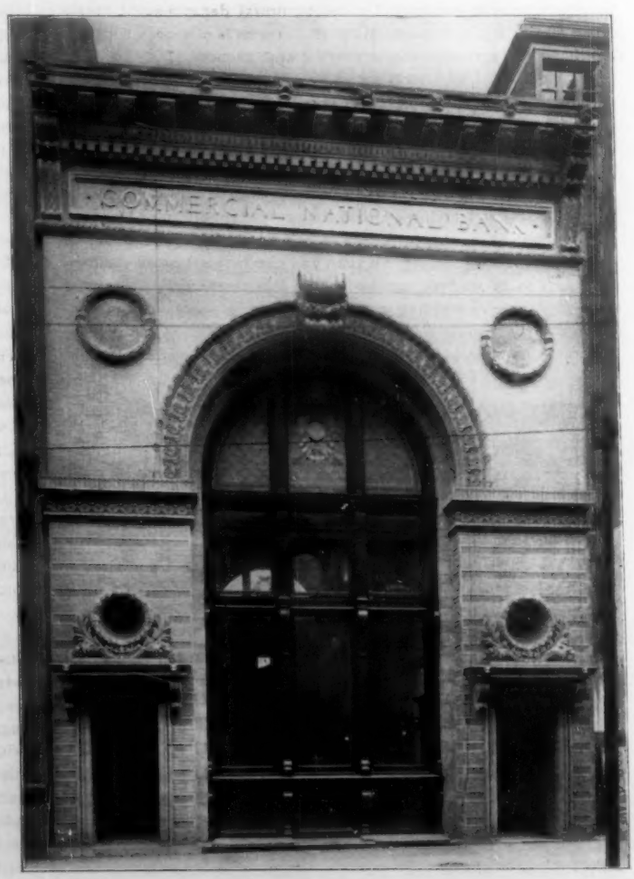
CHICAGO. — The month of July has shown a very gratifying increase in building operations as compared with the same month a year ago, when 370 buildings were started, costing $1,803,525. The figures for July, 1899, are 358 buildings, costing $2,583,000, an increase of 43 per cent. Building interests are still hampered by the brickmakers' strike, and there seems no hope of an early settlement.

Messrs. E. C. and R. M. Shankland, the well-known civil engineers and designers of structural steel work, have been commissioned by the Crown Prince of Japan to design the framework for his new palace. It is said that the Carnegie Company will furnish the steel. The estimated cost of the building is between two and three millions of dollars.

The scarcity of structural steel seems likely to seriously hamper the more important building operations in the near future. A local architect, just receiving estimates on a factory building, has been told that no steel could be promised him before January 1. This means an increased use of cast iron for compression members, and will be a good thing for the local foundry men, who are already very busy.

The most serious result of a recent severe storm was the wrecking of the steel frame of a large church on the north side, which was complete and ready for the masonry enclosure. The ceiling was to be vaulted, and the steel arches of some 60 ft. span were in place. The temporary braces and guys had been carelessly removed, and when the wind struck it a sledgehammer blow with a sudden gust, moving fifty miles an hour, the uprights slowly tottered and leaned, then went crashing and roaring over against and through the brick walls of the adjacent parish school building amid a gorgeous display of sparks struck from the twisted metal. The total loss will be in the neighborhood of $15,000.

A fine educational building is to be erected facing the northern end of Lincoln Park. It will be devoted to the use of the new normal school endowed by Mrs. Emmons Blaine, and is to be built by



COMMERCIAL NATIONAL BANK BUILDING, PITTSBURGH, PA.
Alden & Harlow, Architects.

RESIDENCE, PITTSBURGH, PA.
Roofed with Akron vitrified shingle tile, made by J. C. Ewart Company; architectural terra-cotta by the Northwestern Terra-Cotta Company.
Alden & Harlow, Architects.

her from plans by one of Chicago's Beaux Arts medal men, — Mr. John Gamble Rogers.

Mr. J. C. Llewellyn has designed a very interesting group of brick and red tile buildings for the agricultural department of the State University at Urbana. One of its features is a large court for the display of agricultural machinery and appliances.

A number of architects are at work on huge schemes, destined perhaps some of them never to take tangible form, but all signs point hopefully to the arrival, somewhat late, it is true, of an era of real prosperity for the architectural profession in Chicago.

ST. LOUIS. — There seems to be much dissatisfaction among the builders and architects with the present condition of business. It was thought in the early part of the season that there would be much building done during the year, and the indications at the time were such as to warrant conclusions of this character. There was talk everywhere of building, and a number of improvements of considerable magnitude were started, which were mentioned at the time. It is a little remarkable that nearly all of these buildings are on

CAPITAL FOR THE NEW UNION STATION, DAYTON, OHIO.
Executed by the St. Louis Terra-Cotta Company.
Elzner & Anderson, Architects.

Washington Avenue, between 10th and 13th Streets, and one visiting that locality only might be led to believe the entire city was rebuilding. These buildings are intended for commercial and factory uses, and are of mill construction, therefore giving little employment to skilled mechanics.

The sudden rise in price of all kinds of building materials before contracts could be awarded was no doubt the cause of much contemplated work not going ahead. When prices have become fixed and business adjusted to the new order of things there is little doubt but much important work will be commenced, as at the present low rate for money there can be no better investment than a good commercial or office building.

No little interest has been taken in the forthcoming competition for the buildings of the Washington University. The trustees have invited Messrs. Eames & Young, of St. Louis; Carrere & Hastings and McKim, Mead & White, of New York; Cope & Stewardson, of Philadelphia; Cass Gilbert, of St. Paul, and Shepley, Rutan & Coolidge, of St. Louis, to submit drawings, but it is rumored that the terms were so unsatisfactory that some of these refused to enter. The buildings will cost about $600,000, and are to be located upon the new property west of Forest Park, where the University will move as soon as the new buildings can be occupied.

Holy Trinity parish will soon complete a new church on the southeast corner of Mallinckrodt and 14th Streets, at a cost of $125,000. The building will have an auditorium 117 ft. by 90 ft., with a seating capacity of 1,100. It is in the transitional style, with two towers on the principal façade, and a lantern at the interception of the nave and transepts.

Architect J. L. Wees has prepared plans for a hospital for the Homeopathic Medical College, on the southeast corner of Jefferson Avenue and Mullanphy Street. It will be four stories high, and be built of light brick and terra-cotta. The cost will be $60,000.

Reports from the World's Fair committees are very encouraging, and if they meet with the success that will guarantee the holding of the Fair, there will likely be many buildings started by the beginning of the year.

NEW CATALOGUES.

THE new catalogue entitled "Artistic Roofing Tiles," recently issued by the Celadon Terra-Cotta Company, Limited, is an exceptionally interesting treatise, calculated to make much better appreciated, both from an artistic and practical standpoint, the advantages of having buildings constructed with burnt clay tile roofs. The catalogue contains a full description of each variety of tile which the company manu-

PIER PANEL, AND CAPITAL OVER SAME, AT RIGHT AND LEFT OF MAIN ENTRANCE TO ROTUNDA, SANATORIUM AT SAILORS' SNUG HARBOR, S. I.
This panel is 12 ft. high, and was executed in white terra-cotta by the Excelsior Terra-Cotta Company.
Horgan & Slattery, Architects.

facture; to render these more readily understood, sectional cuts are given of each tile described, showing it individually, also in its relative position when laid on the roof. The advantage of such a complete description is most material to an architect, as by it he can determine which of the various styles represented will best suit the purpose and condition of any roof he has in contemplation.

The catalogue is profusely illustrated, having half-tone cuts of all the various styles of tile made by the company, and also of some twenty different structures roofed with Celadon tiles.

Interspersed through the catalogue is a series of lists of buildings equipped with this make of tile. These lists give name of owner, location of building, and name of architect, and are so divided that each style of tile comes under a separate list. The buildings thus enumerated number over three hundred. The concise, clear arrangement of the catalogue, and the essential worth of the matter which it contains, make it a book of much value to an architect as a work of reference. Parties desiring a copy should address the Celadon Terra-Cotta Company, Limited, Alfred, N. Y.

ANTHONY ITTNER, St. Louis, has recently issued Catalogue No. 4, descriptive of his line of pressed and ornamental bricks. This catalogue is arranged in convenient size for pocket use, and is attractively bound in black morocco. It contains over two hundred and fifty illustrations of the designs of molded brick which are made at the Ittner yards. Besides these, considerable space is devoted to stock designs of mantels, some very attractive patterns of same being shown. The arrangement of this little work is particularly good, every detail being presented in a clear and intelligible manner. Exact dimensions accompany the cut of each style of brick illustrated. In several instances sections of arches, panels, etc., are shown with the bricks laid, to more fully demonstrate the use of certain designs of ornamental brick.

FIRST NATIONAL BANK BUILDING, HARTFORD, CONN.
White brick for front and side walls made by the Pennsylvania Enameled Brick Company.
Ernest Flagg, Architect.

CURRENT ITEMS OF INTEREST.

JAMES A. DAVIS & Co. report that they are furnishing the cement to be used in the construction of the New Music Hall, corner of Massachusetts and Huntington Avenues, Boston, McKim, Mead & White, architects. The "Lehigh" Portland cement will be used exclusively.

THE COLUMBUS FACE BRICK COMPANY, Columbus, Ohio, report that they have secured the contract to furnish their

CORBEL UNDER BAYS IN HALLOWELL BUILDING, PHILADELPHIA.
Work being executed by the New York Architectural Terra-Cotta Company.
E. V. Seeler, Architect.

"Ironclay" mottled brick for the new St. Augustine Church, Pittsburgh, Pa., Rutan & Russell, architects. This is said to be the largest church contract let in western Pennsylvania this year. Three hundred thousand brick will be required.

THE EXCELSIOR TERRA-COTTA COMPANY, through their Buffalo agent, John H. Black, have closed the contract to supply the terra-cotta for the First Baptist Church, Buffalo, R. A. Wallace, architect. The Celadon Terra-Cotta Company, Limited, through Mr. Black, will furnish their Conosera Tiles for the roof of the above-mentioned church.

THE MOSAIC TILE COMPANY, Zanesville, Ohio, have recently received several important contracts to furnish their tiles on new building enterprises. Among these are the Peabody Hotel, Memphis, Tenn., the Lindell Hotel, Lincoln, Neb., and the Nashville (Tenn.) Terminal Station. The company have doubled their capacity for manufacturing Roman Mosaic Tile by the addition of special machines and kilns.

THE ST. LOUIS TERRA-COTTA COMPANY have the contracts to furnish the architectural terra-cotta for the Thornton High School, Harvey, Ill., O. L McMurry, architect, and for the Isaac Walker Hardware Company's Building, Peoria, Ill., R. H. Salter, architect. The company have recently completed a three-story addition to their factory and are now building two new muffled kilns to further increase the capacity of the plant.

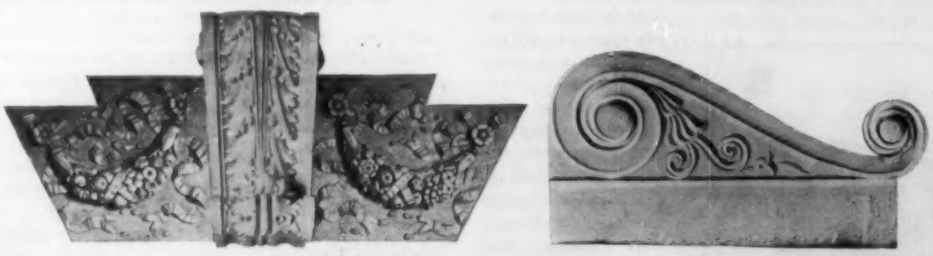
THE WHITE BRICK AND TERRA-COTTA COMPANY has closed contracts to furnish the architectural terra-cotta for the following buildings: Baptist Church, Elizabeth, N. J., A. F. Leicht, architect; store and lofts, 12th Street and University Place, New York, W. C. Hazlett, architect; residence, Tuxedo Park, N. Y., Hoppin & Koen, architects; restaurant building, 1164 Broadway, N. Y., D. W. King, architect; residence, 112 East 38th Street, New York, Wallace & Gage, architects.

THE CHAMBERS BROTHERS COMPANY have recently received an order for an outfit of their brickmaking machinery to go to Germany, and upon the installation of this plant will probably complete arrangements for a resident agency in that country. The outfit comprises disintegrator, elevator, pug mill, and common hollow brick-making machinery. The order was given after several months of

TERRA-COTTA DETAIL, APARTMENT HOUSE, HARTFORD, CONN.
Executed by the Conkling-Armstrong Terra-Cotta Company.
George B. Rogers, Architect.

study of brickmaking as conducted in this country by a member of the firm who will operate this new plant in Germany.

THE UNITED STATES ENAMELED BRICK COMPANY, chartered June 19, held a meeting of stockholders in the office of the Reese-Hammond Fire Brick Company, Bolivar, Pa., on June 24, and elected the following board of directors: J. B. Hammond, E. R. Hammond, B. F. Reese, Leonard Roden, all of Bolivar, Pa., and J. B. Sommerville, of Wheeling, W. Va. The following officers were also elected for the ensuing year: J. B. Hammond, president; B. F. Reese, vice-president; W. M. Wynn, secretary; E. R. Hammond, treasurer, and Leonard Roden, general manager. It is the intention of the company to take the small experimental plant of the Reese-Hammond Fire Brick Company, and enlarge the same at once, and to be in the market within ninety days. The secret process that this company owns and controls by which the brick will be made will enable them to produce a brick that will not craze. All parties interested, stockholders as well as officers, are men of large experience in the clay-working business.



ARCH AND SECTION OF KEY, APARTMENT HOUSE, NEW YORK CITY.
Executed by the New Jersey Terra-Cotta Company.
Neville & Bagge, Architects.

J. C. EWART & Co. are furnishing their Akron Roofing Tiles for the following building operations: Schoolhouse at Pittsburgh, Pa., C. M. Bartberger, architect; First National Bank Building, Media, Pa.; sixteen houses for F. Keemon & Son, Philadelphia, Pa.; residence for P. A. B. Widener, Ashburne, Pa.; residence for John Wanamaker, Philadelphia, Pa.; residence for Collins Marsh, Pittsburgh, Pa.; residence for John Keim, Louisville, Ky.; a residence in Chicago; a residence in New York; fire-engine house, No. 15, Allegheny, Pa.

WE note in *The Iron Age* of late date the announcement of a shipment by Messrs. Merchant & Co., of Philadelphia, of 30,000 lbs. of seamless drawn condenser tubes to Glasgow, Scotland. The present duty on "seamless brass tubes" is 45 per cent. *ad valorem*. The fact that our manufacturers are able to export these articles for sale in foreign markets would seem to indicate that the 45 per cent. duty is unnecessary.

THE MASON SAFETY TREAD is now being very generally specified by architects and engineers throughout the country, and the day seems to be rapidly approaching when this device will be in as common use in other large cities as it now is in Boston, where Mason Tread is included as a matter of course in nine tenths of the important buildings under construction. Four different architects in Buffalo have included it in their specifications for four large school buildings, of which two are now under contract; and one or more school buildings in each of nine other cities are to have this modern equipment. Among other recent orders are the Central Union Depot in Cincinnati, Mt. St. Joseph's Convent (nickel-plated treads), near that city; Mehl & Co.'s large factory at Jersey City; Queens County Court House, New York; the Western Union Building at Pittsburgh; the new hotel and business block at North Adams; three New York police stations; about two hundred more street cars at Cleveland; and eight large platforms on the battle ship *Indiana*. A newly published blue book for architects will be sent on application to the American Mason Safety Tread Company, Boston.

THE CELADON TERRA-COTTA COMPANY, LIMITED, have closed contracts for the use of their roofing tiles as follows: From the Alfred Plant: Residence for Mr. John Swisher, Newark, Ohio, Wilbur T. Mills, Columbus, Ohio, architect; apartment building for S. B. Scoville, Oak Park, Ill., Patton, Fisher & Miller, architects; residence, New York, Thomas Graham, architect; bank building, Monticello, N. Y., H. Gardiner Sibell, Brooklyn, architect; residence for Mr. John L. Waterbury, Morristown, N. J., Howells & Stokes, architects; stable for Mrs. Fred. O'Donnel, Dubuque, Iowa, Wm. D. Williamson, Chicago, architect; First Baptist Church, Buffalo, R. A. Wallace, architect; high school at Morristown, N. J., Seymour Davis, architect; residence, L. B. Price, Kansas City, Mo., Sheppard & Farrar, architects; residence,

RESIDENCE AT PITTSBURGH, PA.
Built of "Shawnee" brick, made by the Ohio Mining and Manufacturing Company, and furnished by Burgy & McNeill, Pittsburgh Agents.
Sidney T. Heckert, Architect.

Thomas Beaham, Sheppard & Farrar, architects, Kansas City; residence, R. A. Crawford, Des Moines, Iowa, Liebbe, Nourse & Rasmussen, architects. From the Ottawa Plant: High school, Lagrange, Ill., J. M. Tilton, Chicago, architect; residence, Gen. F. H. Case, Three Rivers, Mich., D. S. Hopkins, Grand Rapids, architect; residence, M. Husser, Buena Park, Ill., Frank L. Wright, architect; court house, Trenton, Tenn., W. Chamberlain, Knoxville, architect; public library building, St. Paul, Minn., J. J. W. Stevens, architect; shelters and lavatory for Branch Brook Park, Newark, N. J., Carrere & Hastings, architects; depot for the C., R. I. & P. Railway at Anita, Iowa.

BURGY & MCNEILL, Pittsburgh, agents for the Ludowici Roofing Tile Company, report that they have recently secured some very large orders for roofing tile as follows: 3,300 squares, tiles and fittings sold to Riter Conley Manufacturing Company, Pittsburgh, contractors, who are constructing the new mills of the Dominion Iron and Steel Company, Sydney, Cape Breton Island; a large order for tiles and fittings for the new buildings of the York (Pa.) Electric Light Company; an equally good sized order for tiles for the Carnegie Steel Company, and an order for tiles for the new buildings (replacing those destroyed by fire the last of July) of the Riter Conley Manufacturing Company, Pittsburgh. In addition to these they have other large contracts pending which they expect shortly to close. The 3,300 squares for the Dominion Iron and Steel Company, mentioned above, is said to be the largest order for roofing tile ever placed in this country.

MR. J. B. HAMMOND, Bolivar, Pa., representing a number of parties, has purchased the works of the Glade Fire Brick Company, near Fairmont, W. Va., and a new company has been organized to operate the plant under the name of the Hammond Fire Brick Company. Stockholders in the Reese-Hammond Fire Brick Company and others will be interested. The officers for the new company will be: J. B. Hammond, president; T. M. Berkey, vice-president; Thomas I. Brett, secretary; E. R. Hammond, treasurer. The plant has a capacity of 25,000 bricks per day, but will be increased to double that amount.

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Messrs. MERCHANT & CO., Inc., of Philadelphia, New York, and Chicago, who have for so long a time made a specialty of the highest grade of plates, have contributed some valuable literature on this material within the last year, viz.: their booklet, "HOW ROOFING TIN IS MADE" and "HOW A TIN ROOF SHOULD BE LAID"; but not less interesting and valuable is their latest issue entitled "NOT JUST AS GOOD, BUT ACTUALLY BETTER," which minutely describes the difference between their method of making plates and the old Welsh method. It will afford them pleasure to mail any one, or all three, of these little works to any name and address sent them to Philadelphia, New York, or Chicago.

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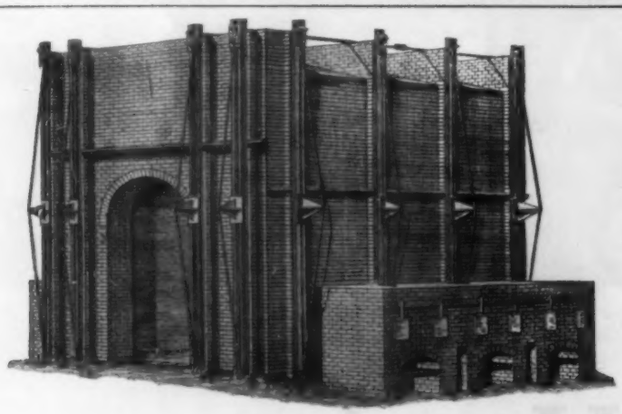

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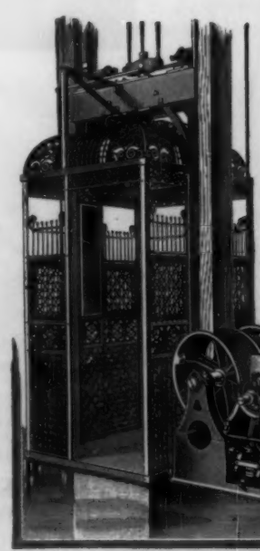

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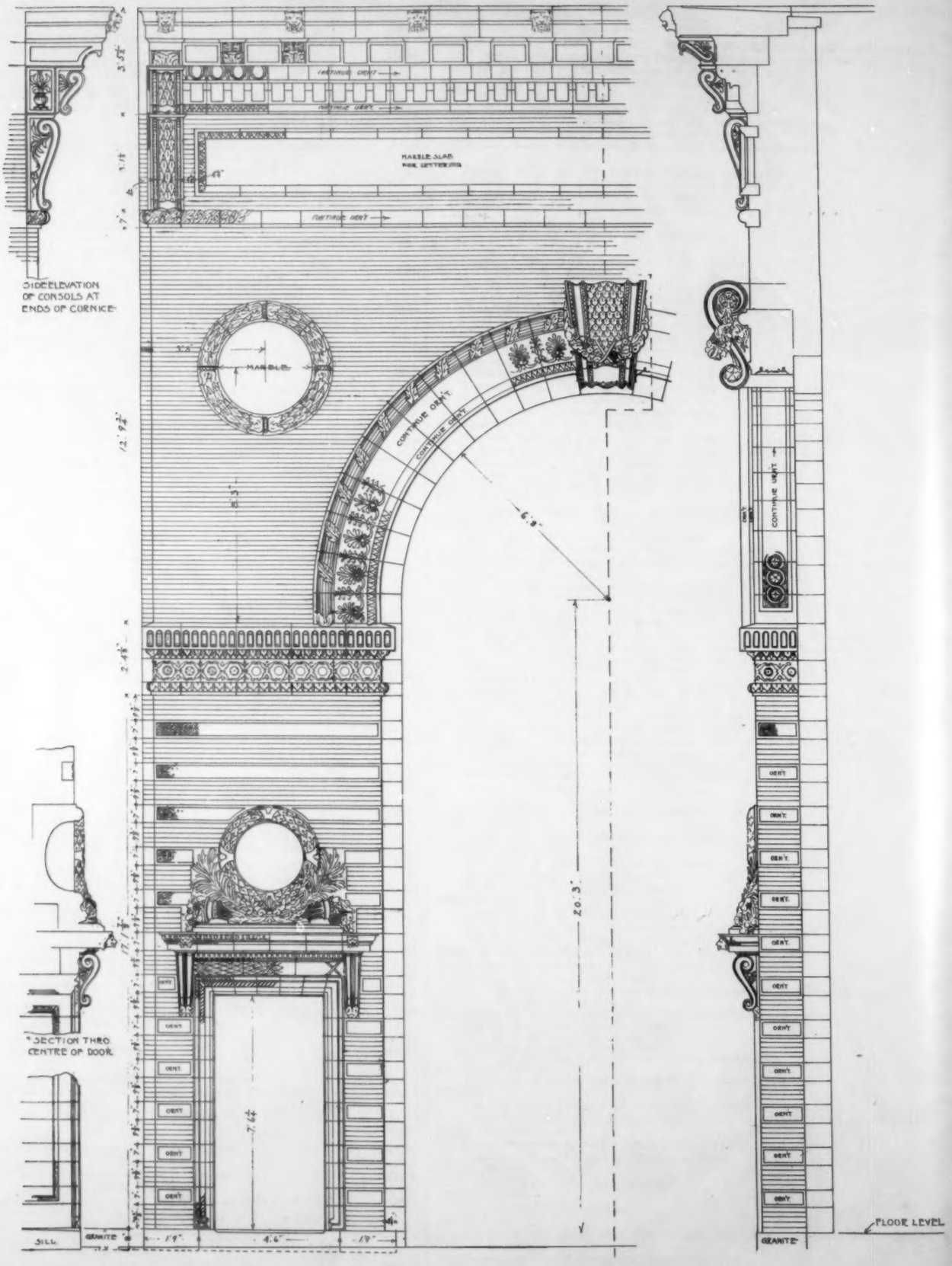

DETAIL OF FRONT.

COMMERCIAL NATIONAL BANK BUILDING, PITTSBURGH, PA.

ALDEN & HARLOW, ARCHITECTS.

(See additional illustration in letterpress.)

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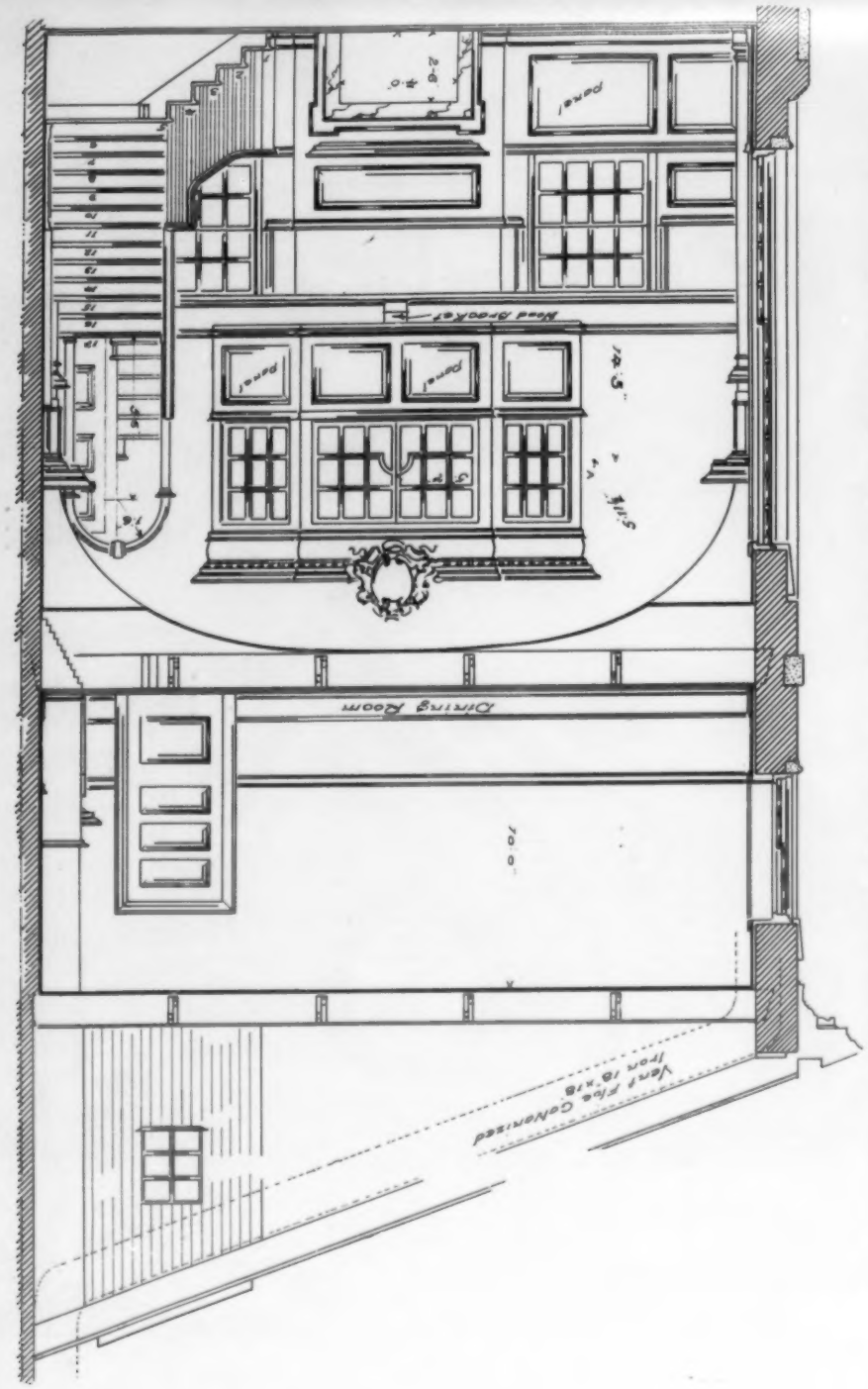

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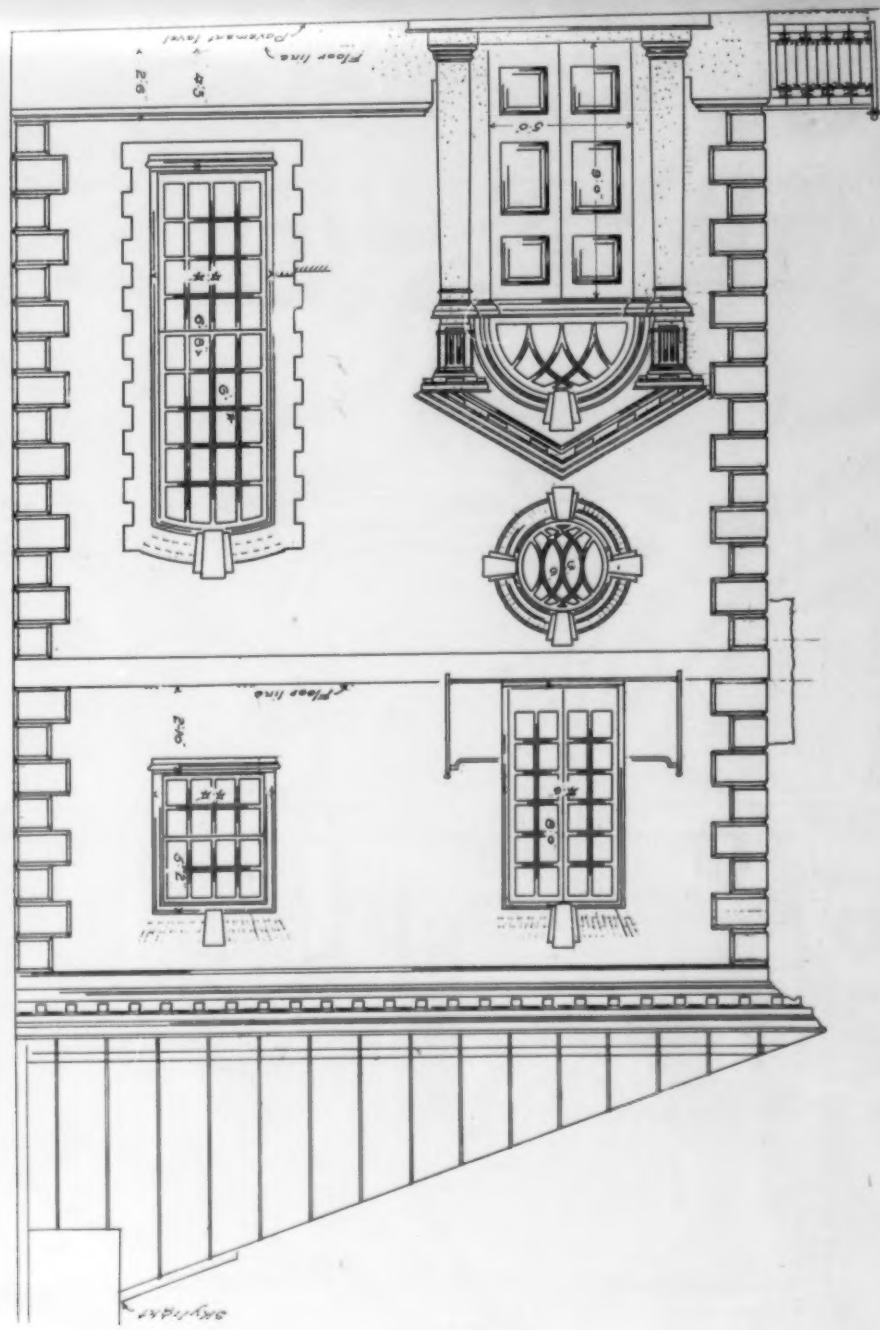

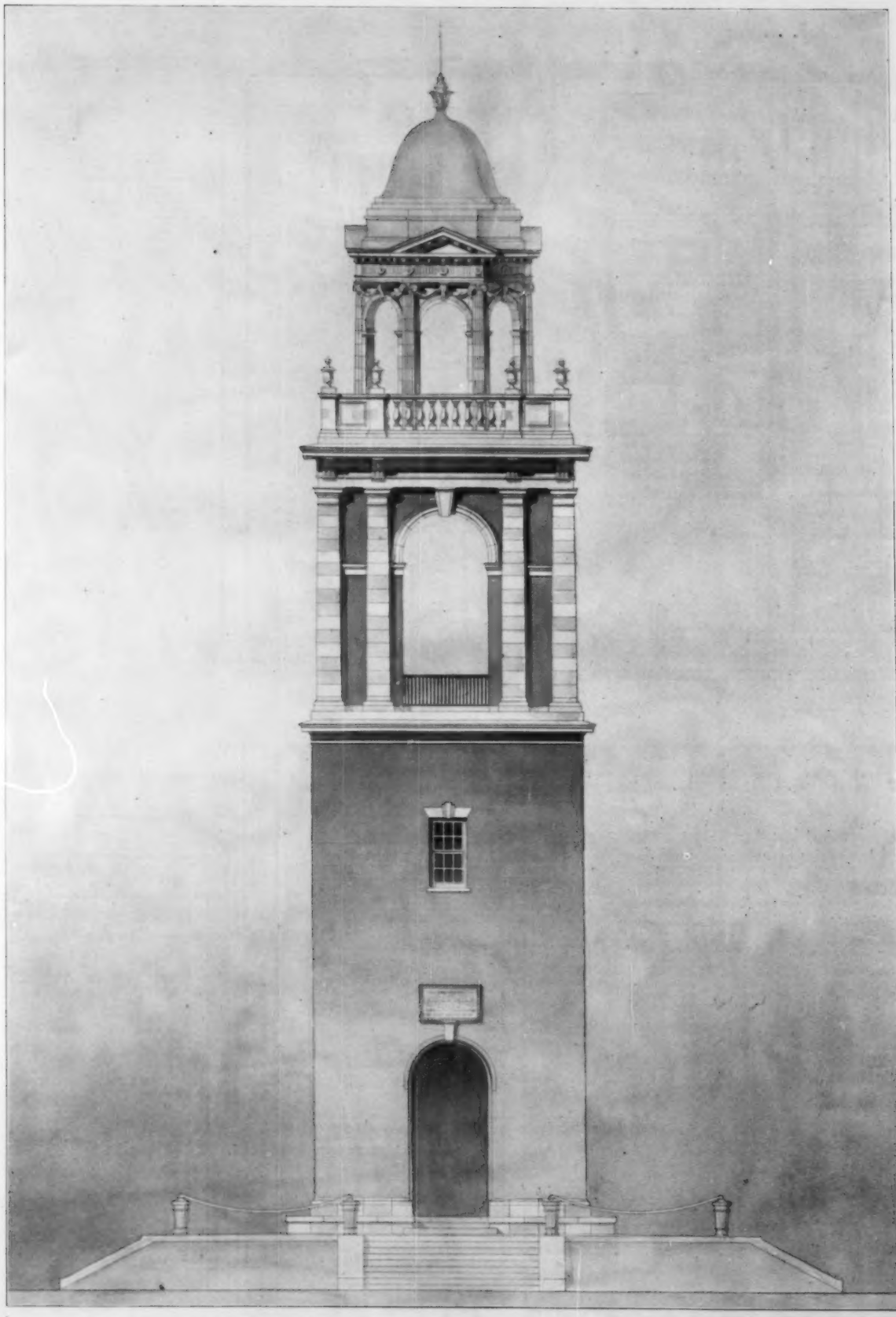

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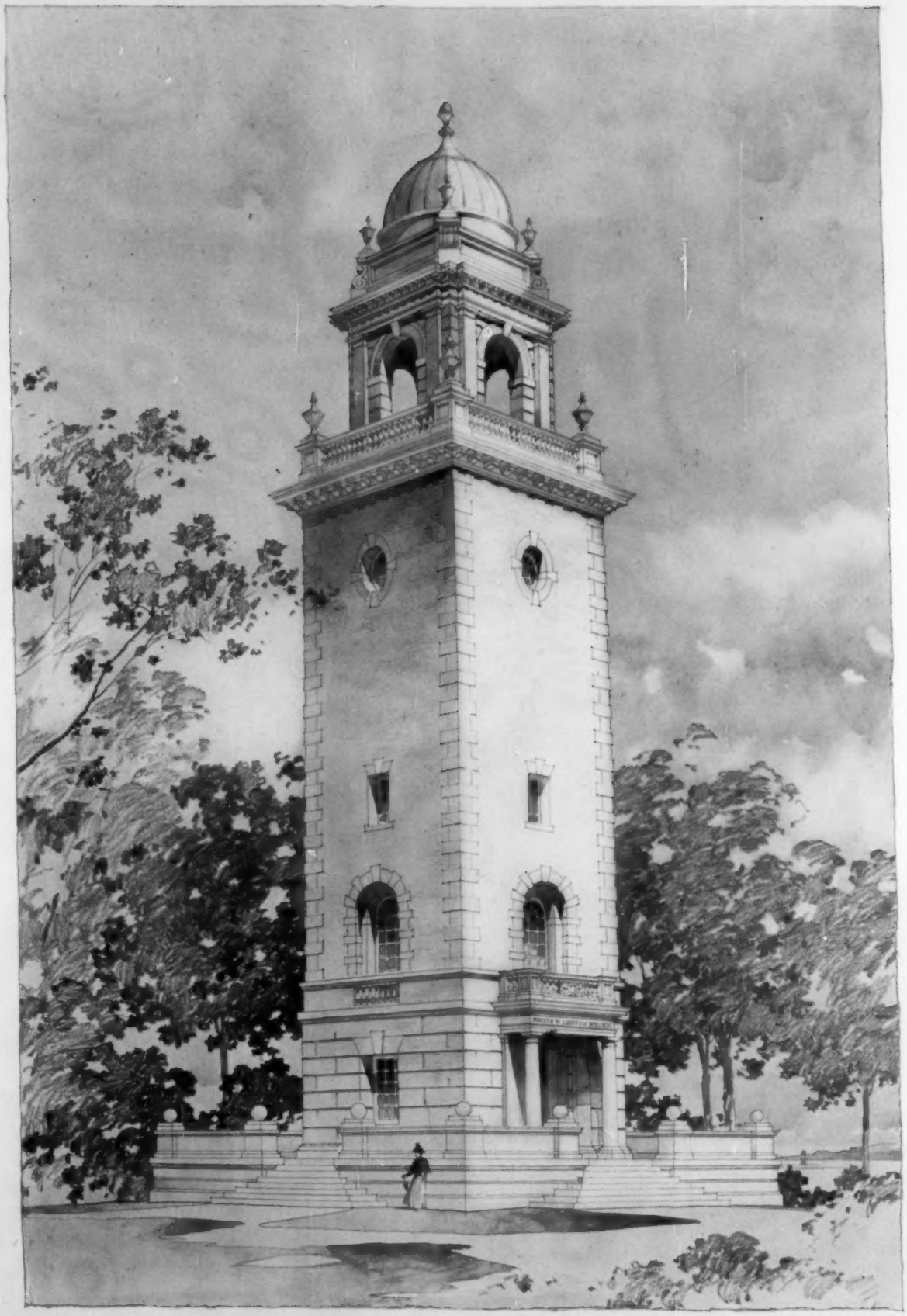
CRAM, GOODHUE & FERGUSON, ARCHITECTS.

SUCCESSFUL DESIGN.

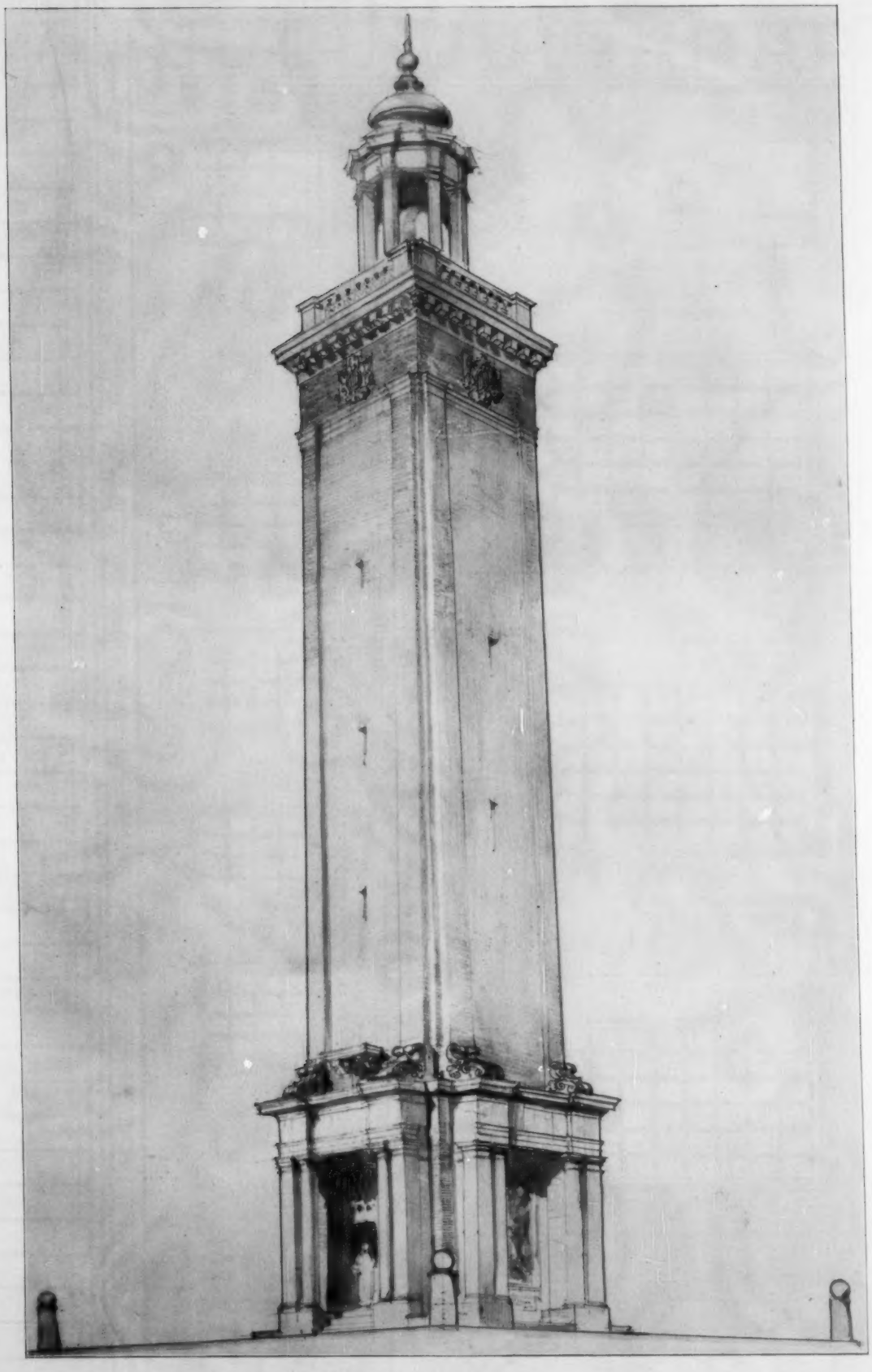
COMPETITIVE DESIGN FOR A MEMORIAL MONUMENT, TO BE ERECTED BY THE STATE, AT DORCHESTER HEIGHTS, BOSTON, MASS.

PEABODY & STEARNS, ARCHITECTS.



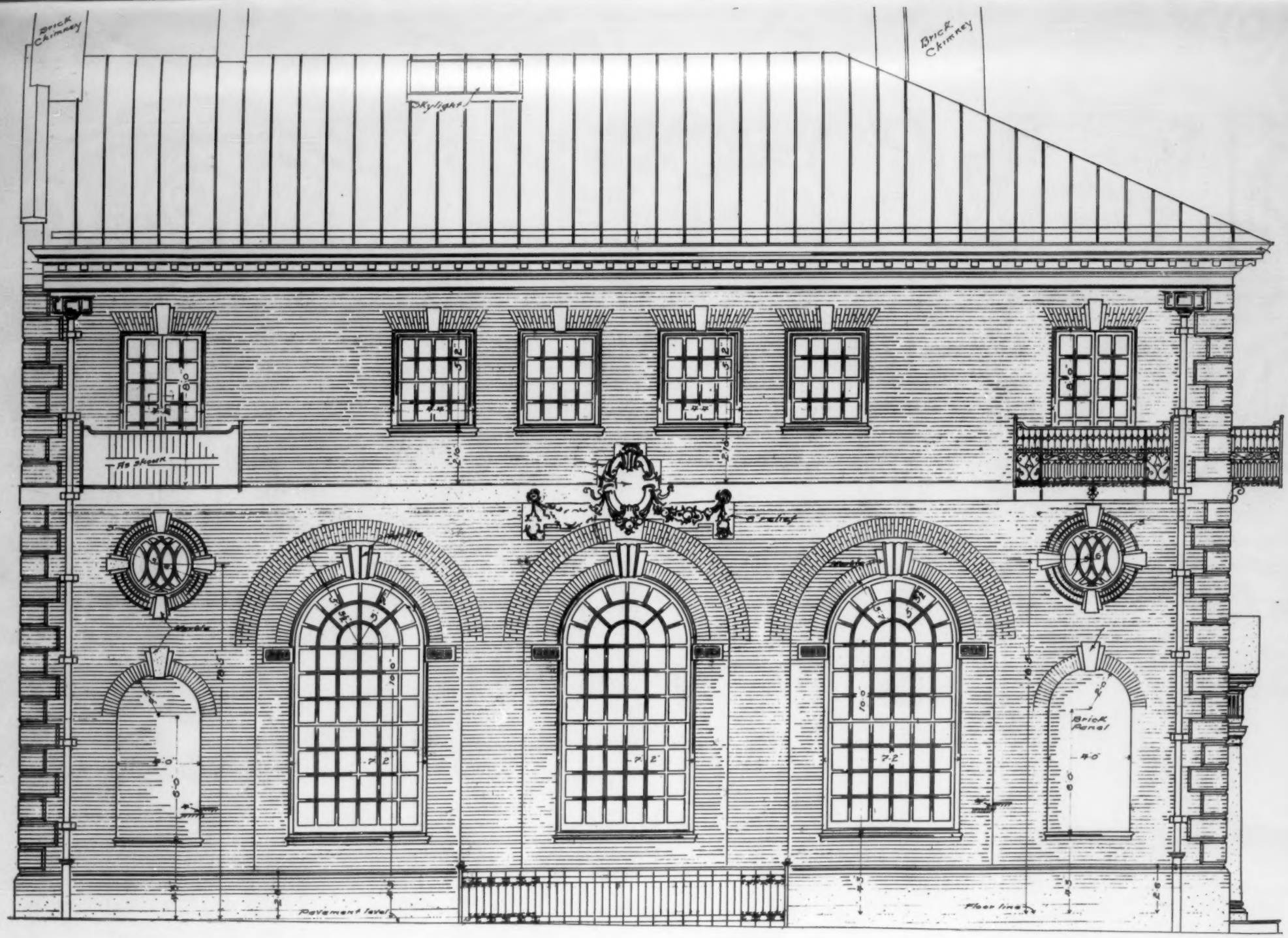
COMPETITIVE DESIGN FOR A MEMORIAL MONUMENT, TO BE ERECTED BY THE STATE, AT DORCHESTER HEIGHTS, BOSTON, MASS.

A. W. LONGFELLOW, JR., ARCHITECT.



COMPETITIVE DESIGN FOR A MEMORIAL MONUMENT, TO BE ERECTED BY THE STATE, AT DORCHESTER HEIGHTS, BOSTON, MASS.

R. CLIPSTON STURGIS, ARCHITECT.

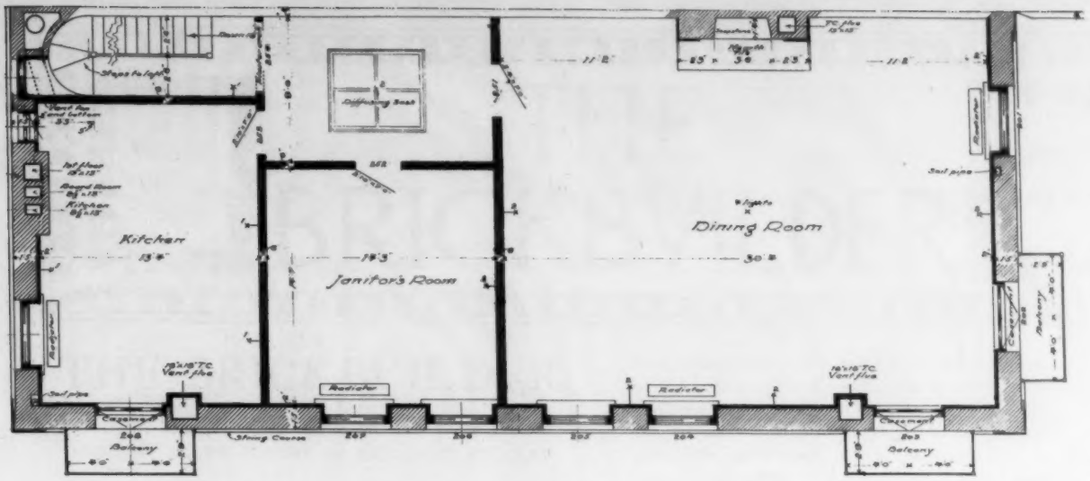


THIRD STREET ELEVATION.

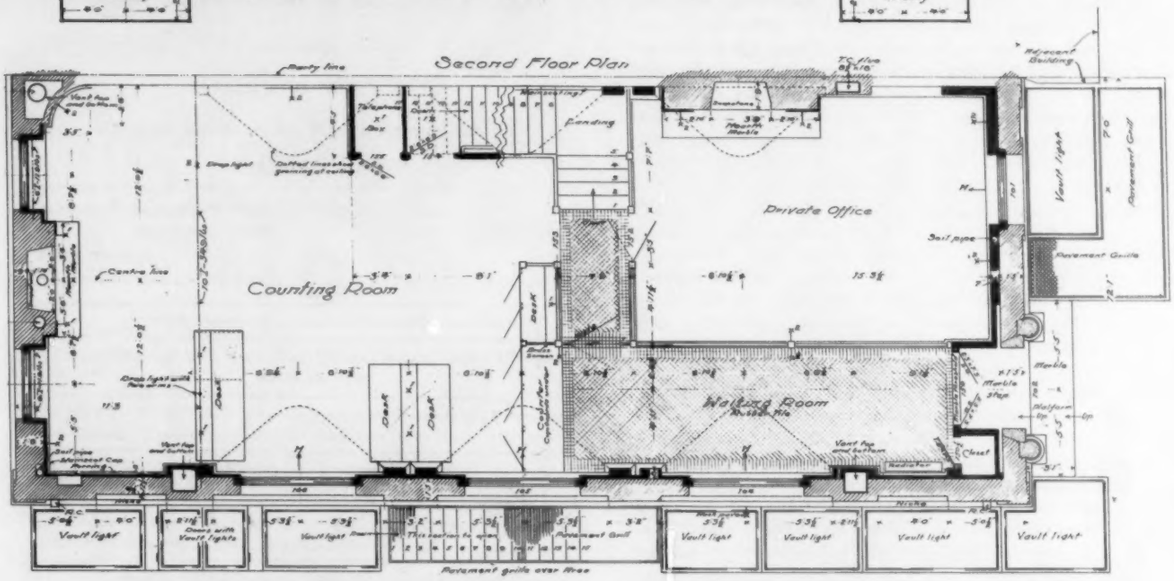
COUNTING HOUSE, THIRD AND CHESTNUT STREETS, PHILADELPHIA, PA.

WILSON EYRE, JR., ARCHITECT.

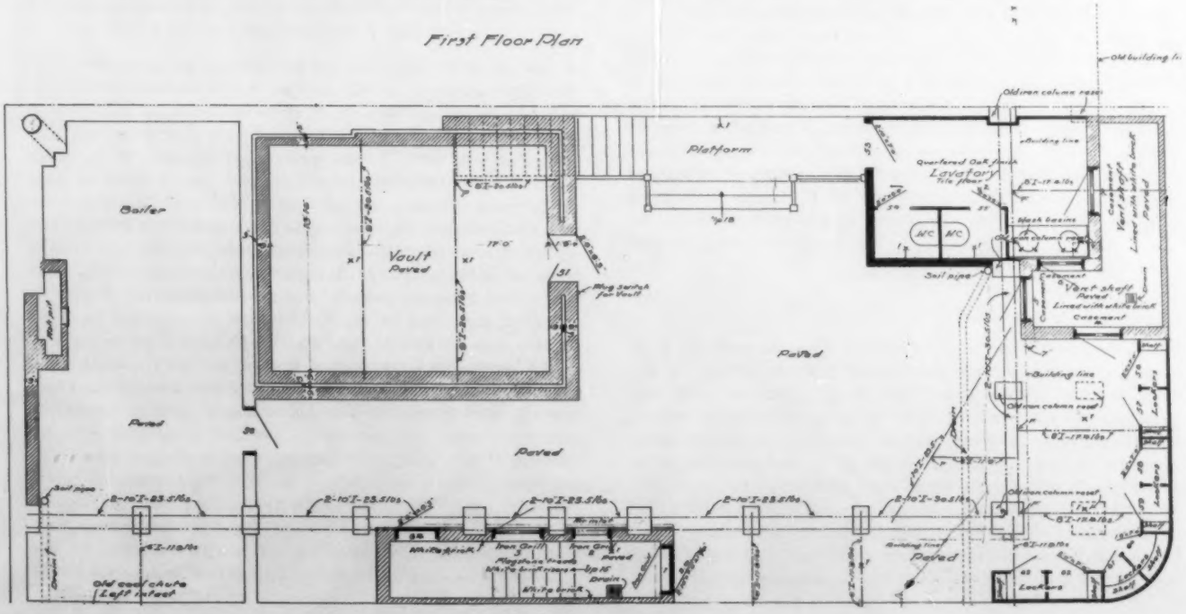
(See additional illustrations in letterpress.)



Second Floor Plan



First Floor Plan


Boiler
Vault
Paved
Platform
Paved
Paved
Paved
Paved
Old coal chute
Old iron column
Old iron column
Old iron column